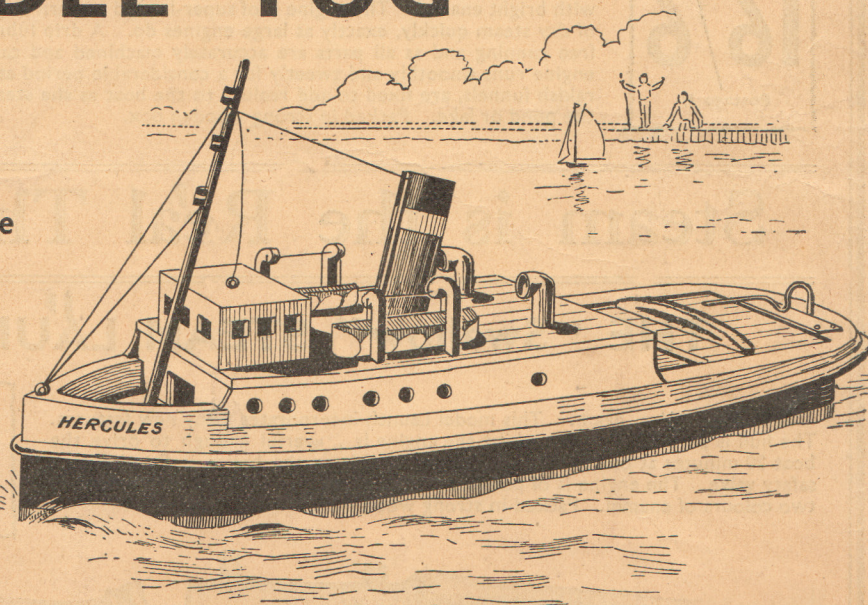


Hobbies

WEEKLY

HOW TO MAKE AN ELECTRICALLY DRIVEN MODEL TUG

*Large free
design inside*



August 8th. 1936

2^D

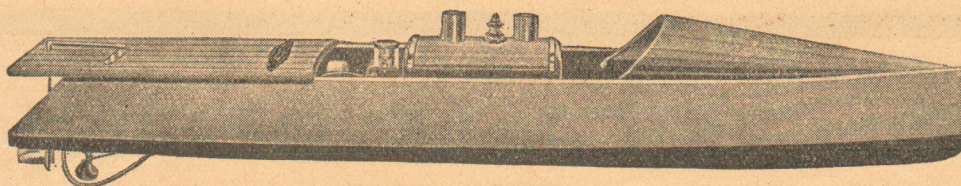
Vol. 82. No. 2129

**THE FRETWORKER'S AND
HOME CRAFTSMAN'S JOURNAL**

BOYS! Have the Real Thing this Summer...

Steam always fascinates. It is such a live, potent force. A model Steam Launch provides endless joy for the modern boy. Racing across the pond.....the realistic "puff" of the exhaust.....tuning up to get that extra ounce of power. Have the real thing this summer—a Hobbies Steam Launch.

THE "Peggy" STEAM LAUNCH



16/6

Postage 1/-

31ins. long, 5½ins. beam. The hull is built by a special process and is finished with bright enamel. The engine is of super-heated pattern to produce a big head of dry steam quickly, exactly as large engines do. A drip lubricator adds to the free running and as all parts are accurately machined and carefully tested, the engine runs smoothly and sweetly for a considerable period at one filling. Two rakish funnels, are fixed to add realism to the boat as she steams steadily across the pond or lake. Packed in strong wooden box.

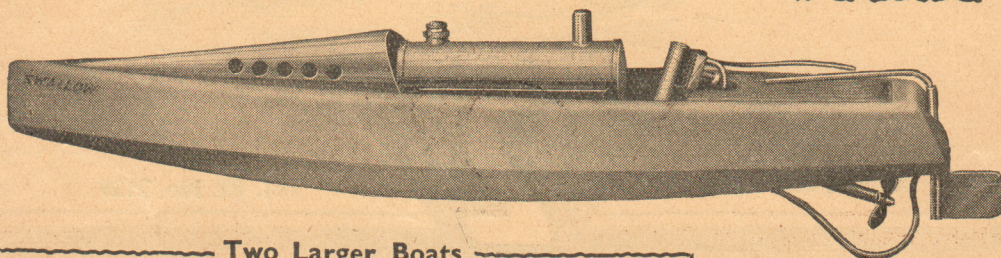
Steam is the Real Thing!

THE "Swallow" STEAM LAUNCH

20in. long, 3½ins. beam. This model Launch incorporates many new features. The hull is particularly light, whilst the engine is powerful enough to drive the boat 20 minutes at one filling. It is perfectly safe as the boiler is fitted with a safety valve. The engine is of polished brass, and the hull is beautifully finished in two colours of enamel. Packed in strong wood box.

17/6

Postage 7d.



Two Larger Boats

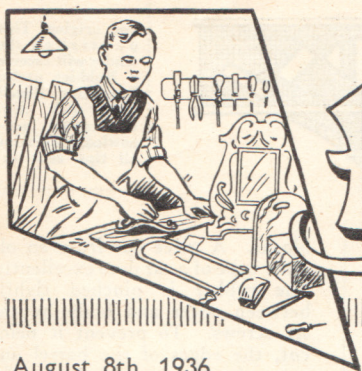
"EAGLE"

27 ins. long, 4½ ins. beam.
Single cylinder engine.
32/- Postage 10d.

"SEAHAWK"

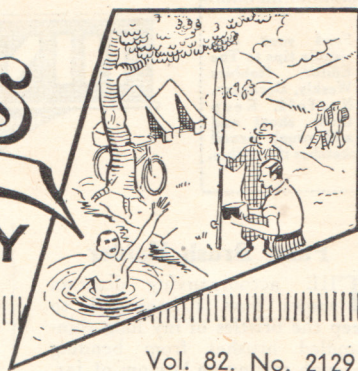
28 ins. long, 5 ins. beam.
Twin cylinder engine.
42/- Postage 10d.

Buy from any Hobbies Branch or Agent, or direct from Hobbies Ltd., Dereham, Norfolk.



Hobbies

WEEKLY



August 8th. 1936

Vol. 82. No. 2129

ANOTHER wonderful issue for you again this week! Something to please everyone I am sure, and enough to keep you busy for a long time. No doubt there will be lots making up that splendid Model Tug and I should like to see photographs of it in action, please. George has already got down to it and has even robbed his cycle lamp of its battery to provide the power. He is frightfully keen on it, and as it is nearly completed, I am expecting a lame excuse every day so he can stay away from the office and try it out. Think I must go with him, for the experimental model made for the design was certainly a fascinating sight. Of course, you don't expect a tug to be a speed merchant, but to keep up a steady and strong pace. Which is what ours does!

THEN some more good things next week to make the paper worth a mint of money! A Special Competition which anyone can enter; how to make one of those little Seaside Floats with just room to get your body in and paddle around; a simple design for a small hanging Hall Rack for hats and coats, as well as photography, swimming, model aircraft etc. Be sure to get your copy, even if you are on holiday.

MANY people now utilize their holiday to move into a new house, or to make an effort to convert a piece of land into a garden. I have just come across a new book "Town Garden Problems Solved" which is a wonderful help in this direction. It deals with all sides in the form of questions and answers, and tells you in quite simple language the practical part of even everyday troubles which a lot of technical books overlook. It even deals with Window Boxes and House Plants. The book costs

but 1/6 and is obtainable from newsagents, or the publishers 4/8 Greville Street, London, E.C.1

THE eighteenth annual model Engineering Exhibition will be held this year at the Royal Horticultural Hall Westminster, from September 17th to 26th. In addition to the usual extensive display of lathes, tools, and light engineering workshop equipment, there will be a big show of models entered in the competition section for the Championship Cup and other prizes. Hobbies readers should write for particulars to Percival Marshall & Co. Ltd., 13-16 Fisher Street, London, W.C.1, so they may enter their own work to win a prize. Models will deal with aeronautics, architecture, agricultural machinery, motors of all kinds, shipping, ancient and modern, speed boats, electrical apparatus and general engineering. The leading model engineering Clubs and Societies will be represented by examples of members' work, and in the speed boat and aeroplane sections the winners of the year's International trophies will be on view. The Royal Air Force is making an interesting display of its methods of technical training for aircraft apprentices. There will also be a display of Hobbies goods of particular interest.

NEXT week is the appearance of my regular series of Aircraft Notes, which I find are proving of much interest. There are, I know,

many clubs which meet regularly throughout the year and the interest is growing considerably. I wish readers would write me and say whether they would like more of these notes. I should like to know what your feeling is about the matter. Just a card "More Air Notes please" or even "No Air Notes, please" would do. Thank you! It does help such a lot when readers tell me just what they like—and don't like!

CONTENTS

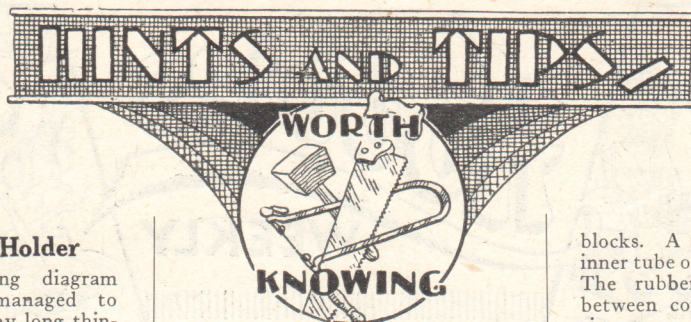
FREE DESIGN—Electrical Model Tug

Hints and Tips	442
Electrical Model Tug	443
Make a Pin-hole Camera	446
A small "Swastika" Bookcase	447
How to make a Tent	449
Wasp Scissors	450
Practical Hints on Cricket	451
A Saw Holder	452
An Occasional Table	453
Swimming	455
Statuette Photography	456
General Electricity Notes	459
Readers' Snaps	461
Glass Panels in Colour	462

Next Week's Design—Hall Rack

Correspondence should be addressed to: The Editor, Hobbies Weekly, Dereham, Norfolk, and a stamp enclosed with the Reply Coupon from Cover iii if a reply is required. Particulars of Subscription rates, Publishing, Advertising, etc. will be found on cover iii.

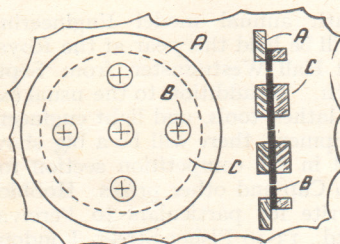
Send your own simple tips to The Editor, Hobbies Weekly, Dereham, Norfolk. Keep them short and add rough pencil sketches if possible.



For original Tips published the sender will receive a Hobbies useful Propelling Pencil fitted with clip. We cannot acknowledge or print all tips sent in.

Paint Brush Holder

THE accompanying diagram shows how I managed to keep the bristles of my long thin-handled brushes from bending through resting on bottom of jar. This cover fits a 2lb. jam-jar. The wood disc A is $3\frac{1}{4}$ ins. dia. and



$\frac{1}{4}$ in. or $3/16$ in. thick. The disc B is of rubber cut from an old motor cycle tube and same dia. as wood disc B, which is $2\frac{3}{4}$ ins. dia. and $3/16$ in. or $1/4$ in. thick. First nail the two wood discs together, A on top and concentric, and cut or bore some holes $\frac{3}{8}$ in. dia. through both and separate again. Then insert the disc of rubber between and nail all three together again. To finish, with a sharp-pointed knife cut cross-slits in rubber showing in each hole. Disc A is the top and the gadget fits on top of jar as a cover. The handle ends of brushes are pushed up through the rubber slits in holes from underneath and holds brushes securely to hang in paraffin or water.—

(J. Dunstan).

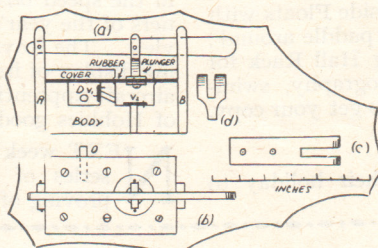
A Photographic Process

WASH negative thoroughly in running water to free it from hypo. Then place it into a dish containing ordinary iodine; submerge negative and watch the beautiful change occur. Bleach it thoroughly and then withdraw the negative, and place it into running water to remove much of the stain. Into a weak hypo bath now place the cleansed negative, and at once the resultant beautiful and permanent effect is obtained. A final washing in water completes the process when the negative must be hung up to dry.—

(Pat Hudspeth).

Easily Made Force Pump

THE construction of this simple but effective little pump should be within the compass of any handy boy's abilities. Fig. (a) is a side view of the pump as it would appear if the body were cut lengthwise down the middle. Fig. (b) is a plan view of the complete pump. Fig. (c) shows the shape of the two supports A and B; and Fig. (b) that of the plunger. A block of hardwood 5 ins. long by 3 ins. wide and 2 ins. deep is needed. The body piece is 2 ins. thick and the cover piece $\frac{3}{8}$ in. thick. To ensure a neat job it is better to make the cover a little larger, secure it to the body by six screws, and plane the edges down to the exact size of the body. The cover having been fixed to the body, a hole $1\frac{1}{2}$ ins.



across and $1\frac{1}{2}$ ins. deep is bored with a centre-bit, centred $1\frac{1}{2}$ ins. from one end. The lower part of this forms the "barrel" of the pump. The cover is then removed, a $1\frac{1}{2}$ in. hole, centred $1\frac{1}{2}$ ins. from the other end, is bored to the same depth. The bottoms of these holes should be made perfectly flat. The other two holes, as seen in the drawing, are next bored. The valves V1 and V2 are circular patches of thin sheet rubber, pinned as shown. A delivery hole D is bored through the side of the body for the delivery pipe (D in Fig. b).

This pump has no piston, its place being taken by a stout rubber diaphragm, which is part of a sheet of the same size as the

blocks. A piece cut from an old inner tube of a car does excellently. The rubber is pinched tightly between cover and body by the six screws. To prevent it being cut, the edges of the barrel and cover should be rounded off. The diaphragm is secured to the end of the plunger by a round-headed screw, passing through washers on each side of the rubber.

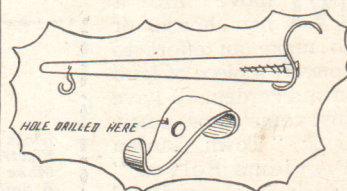
The edges of the washers should also be rounded off. To prevent water swelling the parts, it is advisable to soak them all in hot melted paraffin wax. The inside of the large holes should be liberally coated.—(D. Lindfield).

A Useful Flask

AN old electric lamp bulb can be made into a useful substitute for a flask in simple chemical experiments. Chip off the pitch and remove the contacts. Break the tube to which the filament is fixed and let the filament drop out. The bulb will withstand great heat.—(A. Grant).

Bird-cage Hanger

READERS who keep canaries or other cage birds may have been troubled by the fact that if the birds are hung too near the wall they peck at the wallpaper. Here is a gadget that will prevent this. Take a piece of hard $\frac{1}{4}$ in.



square wood such as oak or mahogany, and of a suitable length and cut as shown in the sketch. Drill a hole in an ordinary picture hook and screw it into the end of the piece of wood, using a 2 in. screw. Fix a dresser hook to the other end and hang the cage on it on the picture rail. A small spring can be fixed on the hook and the cage hung on this so that the cage will gently rock up and down as the bird moves.—

(F. Bellringer).

A MODEL ELECTRICALLY DRIVEN TUG

A realistic model 15ins. long, driven by a pocket lamp battery and built in wood from patterns shown full size on Sheet No. 2129 given free with this issue.

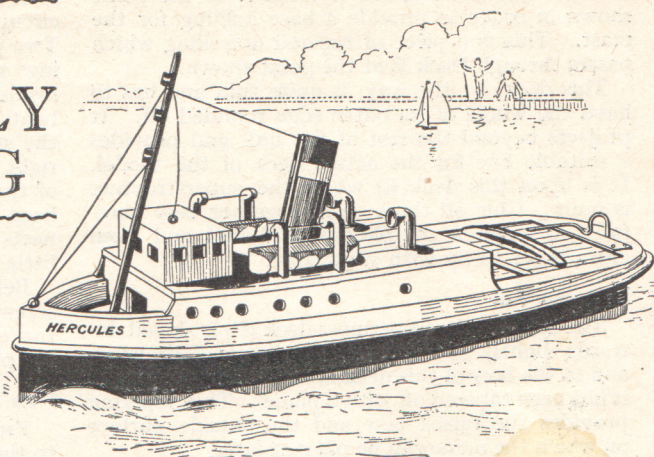
THIS week's design sheet is for the making of a model which we know will be popular with every reader. It is for a little Electric Tug which drives across any pond or calm water at a steady rate and in realistic fashion merely with the use of a pocket flash lamp battery. The appearance follows out as nearly as possible the fussy little tugs one sees at any commercial seaport, and is built entirely in fretwood and finished off in suitable colours of enamel.

There is little actual shaping to be done beyond the hull itself, and the deck superstructure is, necessarily plain. There is at the back, naturally the tow rope carrier, whilst behind the wheel house are the two boats, the funnel and the ventilators.

Electric Battery Drive

The completed boat is driven by a simple Trix motor which is supplied complete and ready to fit into the hull as shown in the detail herewith. This actuates on a propeller shaft which in turn revolves the three-bladed propeller projecting at the stern. All one has to do is to lay the pocket flash lamp battery in place, switch over the lever, and away she goes.

The whole of the hull is built up in layers, most of it $\frac{1}{4}$ in. thick. As this is in deal, however, it can be easily shaped with a fretsaw. Details of the parcel of wood supplied are given herewith and the various parts should be studied with the design sheet and the detailed drawings here to get a good idea of how it is constructed.



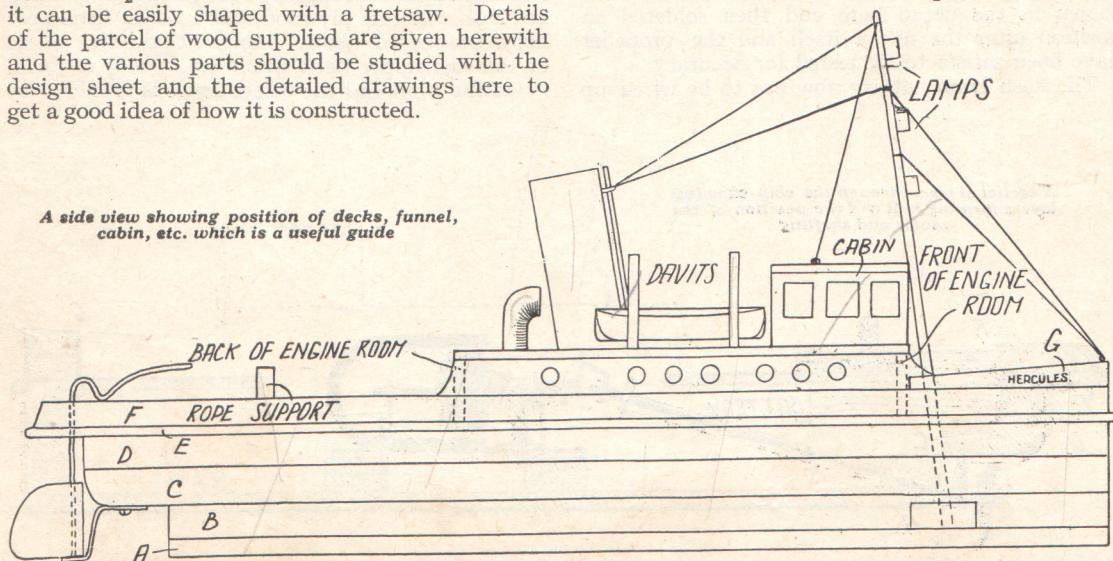
Half only of each deck is shown in the design sheet, but it is, of course, a simple matter to transfer this the other side of the centre line and so provide a complete pattern.

In the wood itself, numerous pieces are incorporated in other parts to reduce the cost. For instance, the boats are cut from the waste of Deck B and the davits from Deck E. Deck F provides sufficient waste wood for the ventilators and the bow piece, whilst from Deck A you can cut the rope support and the rudder.

Note too, that on the design sheet the pattern for Decks A & B are shown together. Actually, the lowermost one (Deck A) is a solid block only, in $\frac{1}{4}$ in. deal, whereas the one above it (in $\frac{1}{4}$ in. wood) has to have the centre cut out.

A Straight Bow

The other decks are glued above in their correct order with A at the bottom. Keep all the points of the bow in line and note that Decks C D E and F project at the stern. The side view given in the detail herewith shows the positions clearly.



A side view showing position of decks, funnel, cabin, etc. which is a useful guide

A circular socket is glued to Deck A at the point shown in order to provide a base holding for the mast. This is a piece of tapered dowelling which passes through Deck E at the point shown.

This deck, by the way, is quite thin and has to have the whole of its outer edge rounded off. It projects beyond the rest of the hull and provides a suitable line for the actual deck of the model. It is upon this deck (E) which the superstructure is built. Glue all these decks together very carefully to make a completely solid hull and then clean them all up with glasspaper.

Deck and Well

The stern of the uppermost deck (F) is sloped inwards slightly as shown by the sectional drawing, and to the bow of this deck is added a piece C after it has been tapered off with a plane. This tapering provides the raised bow and the outside surface on which the name can be painted later.

The well of the boat, of course forms the position for the Trix motor and this is set on to the bottom on two blocks and there fixed by means of wire threaded through and screwed down. It is shaped as shown in the detail. The exact position cannot, however, be known until the propeller shaft tube has been put in, and the angle of this must be carefully watched so the head of the propeller is in line with the gear wheel of the motor when that is stood on its blocks in position.

The Propeller Tube and Shafting

The sectional drawing of the boat shows this, and careful measurements must be taken before the hole is bored. A $\frac{3}{16}$ in. bit is used and it passes through the end of Deck A upwards and through Deck B to come out into the well. It should be central and straight so the propeller shaft tube is driven firmly and tightly through.

The tube, of course, finishes with the outside to the hull and the propeller itself and to the opposite end of the shaft is fitted a brass angle piece which will engage with the projecting arm of the motor gear. This brass piece is bent as shown in the detail here and then soldered in position after the motor itself and the propeller have been satisfactorily tested for accuracy.

The flash lamp battery now has to be wired up

so it will connect with the motor, and the wiring circuit is given herewith to show how it is done. Two pieces of copper contact strip (from the fittings supplied) are cut 2in. long and screwed to the inside of Deck D with the battery connections bent back to form spring contact. One wire on the strip on the side is carried to a screw driven right through Deck E which forms the underside of the switch lever. This switch is put under the head of the screw on the top of the deck and connects with the "on" screw driven right through, a little distance away.

Beneath the deck and on the other end of the screw, the wire is carried to the Deck A (the last) turned round a screw there and then brought to the projecting tab of the motor.

"On" and "Off" Switch

From the other copper strip previously screwed to the deck, a wire is carried through direct to the motor after having been turned round a screw in the floor to keep it away from the propeller shafting. The actual switch is made to the shape shown and connects the whole battery up when passed across to the "on" screw. The second screw provides the "off" resting point of this switch.

Tiller and Rudder

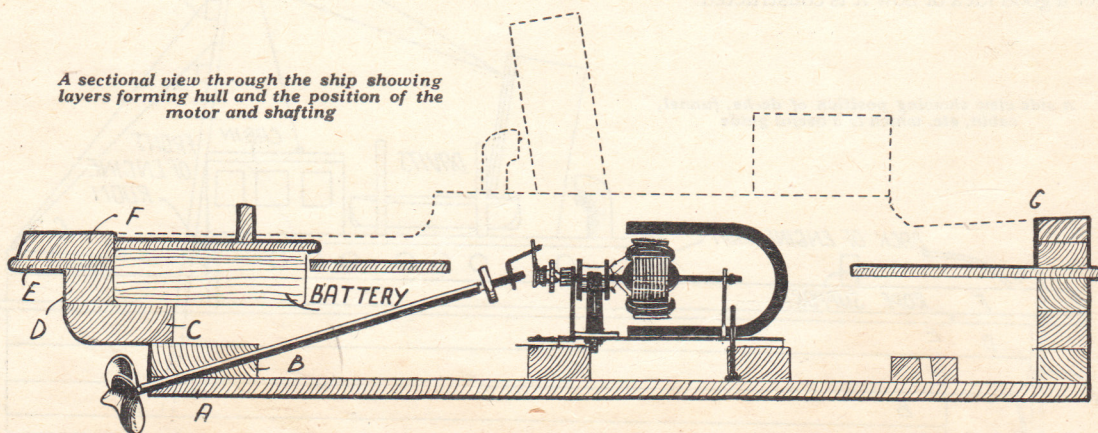
The detail is given herewith of the tiller, rudder, and deck plate and this shows how the brass copper supplied is cut (a fretsaw will do it) and bent to provide the bearing. The rudder itself must be tapered towards this outer end and the wiring driven through carefully to provide the tiller. This tiller is bent to come on the bearing plate firmly enough to hold the rudder in place when the tug is in action.

Deck Works

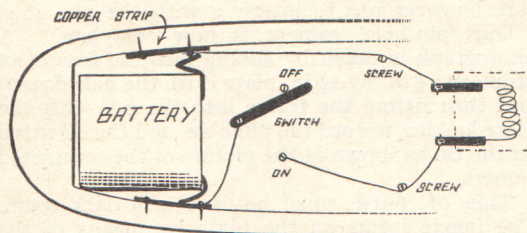
The deck superstructure can be gathered from the side views herewith. Blocking pieces are glued to Deck F near each end of the strip of plywood which is bent slightly and glued and screwed in place. In this plywood half a dozen little port holes are bored before fixing. Upon the whole of this the upper deck (from $\frac{1}{8}$ in. wood) is fixed.

On the front end the wheel house is provided by

A sectional view through the ship showing layers forming hull and the position of the motor and shafting



putting the front and back between the two sides and adding a plain square roof. The funnel is cut from rim diameter dowelling with the bottom end cut at an angle to provide the rake. The top of this funnel can be made more realistic by using $\frac{3}{8}$ in. centre bit and drilling a hole a little way down (say $\frac{3}{8}$ in.) to provide the rim. This, of course, will have to be done very carefully and gently.



The wiring circuit with the motor on the right

The two ventilators are shaped from $\frac{3}{8}$ in. deal rounded off and glued to face forward in the positions indicated. Two davits are provided at each side and they can be glued to the deck or let into it slightly and nailed from beneath.

The Small Boats

The shape of the boats is given in the detail on the sheet and they are glued on the deck immediately below the davits. The whole of this upper deck should be completed and raised upon two parts forming the front and back of the engine room. Glue this front and back immediately below the top deck so the whole thing fits snugly and firmly between the plywood sides.

It is advisable to hold this entire part by means of round-headed screws driven downwards in the blocks supporting the plywood. Do not glue the part on because it should be removable in order to get at the motor beneath.

MATERIALS SUPPLIED

Wood—For making this model we supply a parcel of Satin Walnut and deal with sufficient dowel for mast and funnel for 1/8 post free 2/3.

Fittings—A suitable Trix Motor 2/6, propeller and shaft 1/9, Copper Strip and pieces of brass with brass wire 6d. Postage on fittings 4d.

Complete parcel of wood and fittings for 7/- post paid.

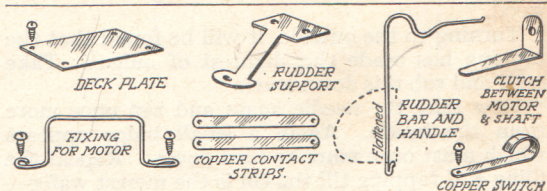
The mast has already been dealt with and the three lamps are made from little pieces of dowelling and glued on the front at the points shown.

The whole boat is thoroughly cleaned and should afterwards be given a coat of primer and then a coat of enamel. Below the waterline it can be red and above black as far as the projecting fender deck (E). This deck again, can be red on the edge with the side above it white.

Deck Colours

The decks themselves should be painted buff or biscuit and pencil lines run down when they are thoroughly dry to mark the plankings. The funnel can be red and capped with any colour desired. The boats, of course, should be painted white but the tops brown to indicate tarpaulin covering. The deck houses and the other additions to the top deck can be white.

No doubt readers will delight to add their own further finishing touches. There can, for instance, be wireless and the rigging from the masts as well



The shape of the various metal parts

as anchor, ropes, bollards, stays siren, etc. When you are on holiday, or if you live at a seaport, make a point of seeing some of the little tugs and notice the various small additions which can be added at your leisure.

Finally, of course, you will try out the boat in the bath or some large basin where you can control it to see that the water does not percolate through—particularly where the propeller tube passes. If so, squeeze in some white lead and putty up tightly all round. Then you can take your completed boat, put in the flash lamp battery, turn on the switch, and away she goes!

AUGUST PHOTOGRAPHIC COMPETITION

Subject— "ON HOLIDAY"

This month's subject should bring in a deluge of entries. It is the holiday month and we want you to make pictures that capture the spirit of holiday time. Whether you are staying by the sea or on a farm, hiking, camping, or even spending the time at home, no matter where, you have as much chance of winning a prize, if you just get the spirit of August into your efforts.

For the picture that best portrays the holiday spirit we offer prizes for seniors and juniors as set out in the rules below. Send your entry in early.

OVERSEAS SECTION

A special chance provided for Overseas Readers who can send entries in so they arrive by December 31st. A prize of 10/- is offered for the best subject under the same rules and addressed to the Overseas Photographic Competition, Hobbies Weekly, Dereham, Norfolk.

PRIZES AND RULES

In the Open Section a 1st Prize of £1 and a 2nd Prize of 10/-. In the Junior Section (those under 16) the 1st Prize is 12/6 and the 2nd Prize 7/6. Each print must bear the competitor's full name and address, and his age, if under 16 years. Entries should be addressed Amateur Photographic Competition, Hobbies

Weekly, Dereham, Norfolk, and must arrive not later than August 31st. The Editor reserves the right to publish any entries he wishes in Hobbies Weekly. No competitor to take more than one prize during the season. If a stamped addressed envelope is sent with the entries every endeavour will be made to return them, except the prize-winning ones.

MAKE A PIN-HOLE CAMERA

HERE is a method by which a perfectly workable camera can be made without any expense whatsoever. All that is required is a rectangular tin with a 'slip-on' lid about 4 ins. by 3 ins. and 3 ins. deep, and some card. The only expense is of course the photographic plates upon which to make the pictures. The precise size of the tin is not material. Actually the larger the better, but if it is much bigger than the above dimensions the camera becomes cumbersome for carrying about.

Taking the tin first of all, mark the centre of the base on the inside. This can be found near enough by drawing diagonals; the centre is where they cross. At this point we wish to pierce the tiniest of holes possible through the tin; the smaller it is the sharper will be the final pictures. The best way to do it is by tapping a large darning needle on the point from the inside, the tin resting on a piece of wood.

Turning to the outside, it will be found that the tapping has made the slightest of bulges. Take a file and rub this down level.

Now take the needle again and tap once more from the inside. Again a small bulge appears which must once more be filed down. Repeat the filing and tapping till the tin is the merest wafer—a slight press now will just send the point of the needle through, and the "pin-hole" is complete. The great thing is, this hole must be tiny and as possible a true circle.

Now take the lid of the tin and cut a rectangle of $\frac{3}{32}$ in. thick card just to fit inside the rim and from this cut a rectangle $2\frac{3}{8}$ in. by $3\frac{3}{8}$ ins., thus forming the collar (A).

Next cut a three sided piece of card as (B), the measurements (a) and (b) agreeing with the outside width and length of the collar of card just cut and the inside dimensions being as shown. Glue this on the collar (A) as per (C) leaving $\frac{1}{8}$ in. clear space right round the inside of the rectangular opening.

Now cut another piece of thinner card, the same size as the lid and glue it over the back. The gluing should be thoroughly done and the whole put under heavy pressure while drying. The complete article should be a frame as per (D) into which a standard sized glass

plate $3\frac{1}{2}$ ins. by $2\frac{1}{2}$ ins. will just slide as (E).

The interior of the box and the frame should be finished with a dead black paint (eggshell black is quite suitable), to prevent inside reflection. Take care however not to interfere with the pin hole.

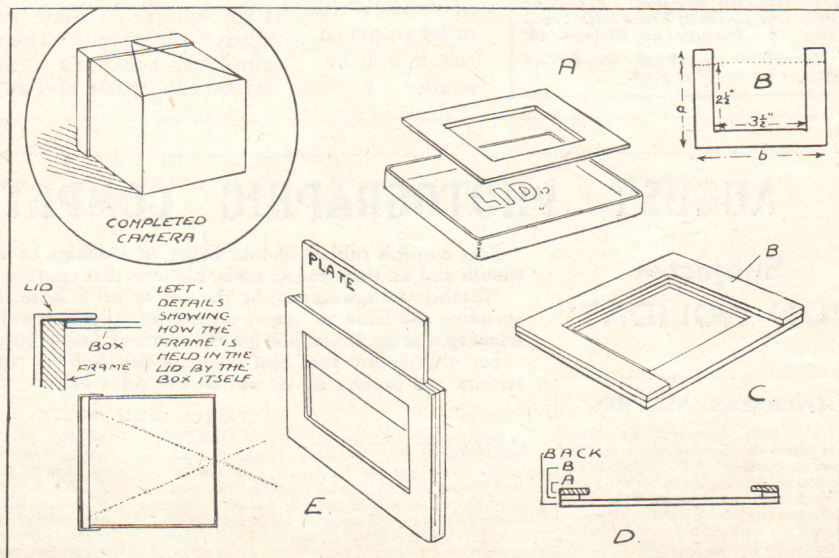
Our 'pin-hole' camera is now complete. A photograph is taken by sliding into the frame an ordinary $3\frac{1}{2}$ in. by $2\frac{1}{2}$ in. plate (i.e. the half-dozen) and then fitting the frame into the lid, with the plate looking toward the pin hole, and the lid fitted on the tin as shown in the picture of the completed camera.

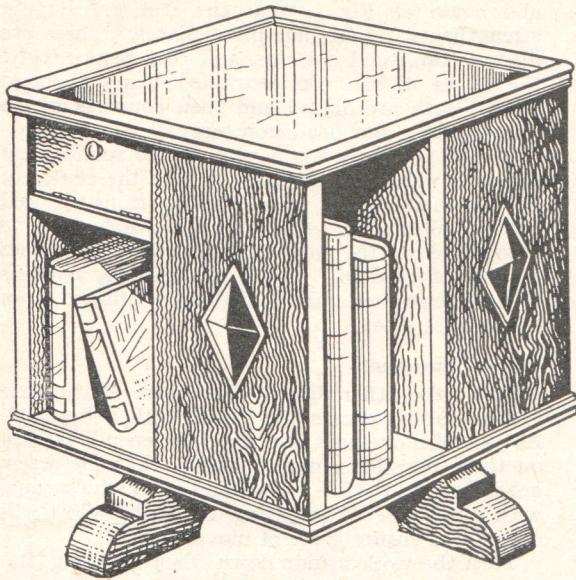
This, of course, must be done in a dark room. The image forms on the plate by means of the pin hole, which being very small, acts as a lens. A pin hole has one very big advantage over a real lens and it is no matter how you place the camera, all objects will be in focus, no matter how near or how far.

A fair idea of what will appear on the plate can be obtained by drawing two lines as seen in the drawing of the camera. These act as a view finder. The pin hole is covered by a piece of adhesive tape or stamp paper, till it is time to take the picture and it is replaced afterwards.

The length of exposure required by a pin-hole camera limits the pictures that the camera is capable of taking, but if subjects are only attempted where the long exposures are possible, good pictures can be obtained.

A fair example of exposure (for a 600 H & D plate) is 2 to 3 minutes on a well-lit subject, sun shining, during April, (time 10 a.m. to 5 p.m.) February would require twice this. A few experiments will soon give a clear idea on this point however. The camera of course must stand on something firm during the time of taking.





A SMALL "SWASTIKA" BOOK CASE

four separate compartments irrespective of the little cupboards previously mentioned. The front elevation at Fig. 1 will give most of the dimensions whilst the view at Fig. 3 would almost suffice to clearly explain the mode of assembly.

In view of younger workers, however, we would add that the central division sections (measuring 13ins. long by 15ins. wide by $\frac{1}{2}$ in. thick) are first squared to size, centred, and $\frac{1}{2}$ in. wide channels (half checks) cut half and half in each with tenon saw and chisel. This is in order that they may "lock" together as indicated by the cut away view

WE illustrate herewith one of the latest pieces of furniture yet designed for the modern home. Every home-craftsman will enjoy making it, for apart from its simple construction, we have here "something" novel and really worth while.

There's another point about it too, that many will like—that's its plainness and size. Why, the whole thing just stands 18ins. high by 16ins. square—ideal for that bare-looking corner of the sitting room or beside that "isolated" armchair!

A Combination

It is, in fact, almost a "combination" of everything. As well as being a revolving bookcase, you can utilize it as a smoker's cabinet, wine or invalid cabinet or as a card table, etc.

What makes this possible is the two small hinged doors of the top compartments. There is sufficient accommodation inside for the smoking outfit, playing cards, and any other odds and ends. The doors are fitted with ball catches and are, of course, quite easy to open and close.

It is constructed throughout from $\frac{1}{2}$ in. and 1in. thick satin walnut—a deservedly popular wood and cheap in respect to grain value and durability. This and the fittings are supplied by Hobbies Ltd., a price for which will be given on request.

Building the Case

The case is constructed in the well-known "swastika" fashion, i.e., we have the formation of

Fixing the Wings

When this has been done, the "wing" portions—they measure 13ins. long by $7\frac{3}{4}$ ins. wide by $\frac{1}{2}$ in. thick—are glued and nailed (use flat nails) to the edges carefully, after which the cupboard shelf divisions ($7\frac{1}{4}$ ins. by $7\frac{3}{4}$ ins. by $\frac{1}{2}$ in.) are glued and nailed 3ins. down from the top. The top and bottom covering pieces are 16ins. square and must be attached similar to the divisions, keeping same flush with the edges.

All nail heads must, of course, be punched a trifle below the surface and filled in with plastic wood or coloured wax. It will not be necessary to do this to the nails at the top and bottom. These will be effectively hidden with the mouldings.

Corner Moulding

When the glue has set, glasspaper all parts to be seen, neat and smooth. The corner moulding (No. 301) could be mitred and affixed to the top edges, the other moulding (No. 18) going to the bottom as in the picture.

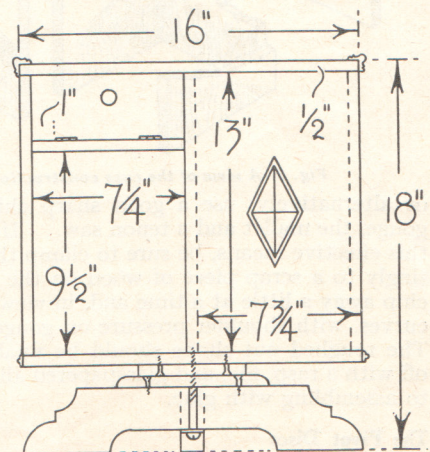


Fig. 1—Front elevation with dimensions

MATERIALS SUPPLIED

- | | |
|---|---|
| 6 pieces satin walnut, 16ins. by 16ins. by $\frac{1}{2}$ in. thick. | 4 lengths No. 301 corner moulding, 18ins. long. |
| 1 piece satin walnut, 12ins. by 8ins. by $\frac{1}{2}$ in. thick. | 4 lengths No. 18 moulding, 18ins. long. |
| 1 piece satin walnut, 16ins. by 3ins. by $\frac{1}{2}$ in. thick. | 4 diamond ornaments No. 206. |
| 1 piece satin walnut, 16ins. by 8ins. by $\frac{1}{2}$ in. thick. | 2 brass knobs No. 5373. |
| 2 pieces satin walnut, 16ins. by 3ins. by 1in. thick. | 4 brass hinges (strong) 1in. long. |
| | 2 ball catches No. 5480. $\frac{3}{16}$ in. |
| | 1 doz. $\frac{3}{8}$ in. by 3 brass flat head screws. |
| | 1 doz. $\frac{1}{2}$ in. by 4 iron flat head screws. |

Owing to the unusual shape of the former moulding, the mitring will not prove difficult if a piece of planed scrap wood is set in the mitre block and the length of moulding placed along the foremost corner.

Making the Feet

A half section of the base stand feet parts will be found at Fig. 2. This could be marked on on thin card, cut out, and used as a template for pencilling the complete shape onto the wood which, in this case, measures $\frac{7}{16}$ ins. long by 3 ins. wide by 1 in. thick. Still, as the design shape is composed

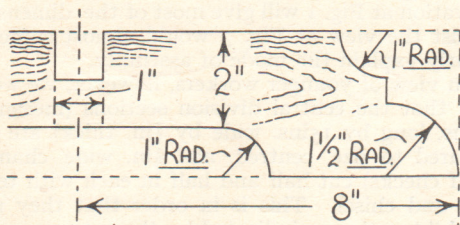


Fig. 2—Half section of feet

mostly of "compass" work, it should be easy to strike the shape direct to the wood with the compasses and set square. This will also ensure accuracy, and when doing so, don't forget to make the central half checks opposite to each other.

Regarding the thickness, many workers might find the work of cutting out the shape rather a tough proposition, especially as the usual home implements available are only the bow saw or scroll saw. The next best thing, therefore, is to take the prepared wood to the local machine shop,

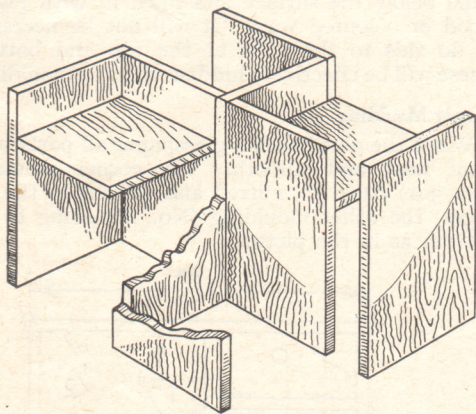


Fig. 3—A view of the case construction

or alternatively, use a good sharp chisel, a $\frac{1}{4}$ in. gouge, the mallet and a tenon saw. If you adopt this effective means, be sure to clamp the material singly to a scrap piece of wood on the bench and chip away a little at a time and, in view of outside curves, with shoulder pressure on gouge or chisel. The roughed out shape should be finally levelled off with a rasp, file, and glasspapered all over prior to assembling with glue.

The Pivot Discs

It will be seen by the drawing detailed at Fig. 1

and again at Fig. 4 that the feet are further strengthened by circular pivot plates. These are discs of $\frac{1}{2}$ in. wood cut 7 ins. and 5 ins. respectively, the edges of the forementioned being rounded over. Both are drilled and then countersunk to suit $\frac{3}{4}$ in. by 8 flat head iron screws.

As the pivot used is a $\frac{3}{4}$ in. by 10 round head screw, it would be advisable to find the centre of the feet half checks, and—working from top and bottom alternately—drill out a suitable hole to accommodate the screw shank with an exact amount of freedom. The larger disc only remains to be screwed on and the drilling continued from the reverse side.

Ease of Movement

Screw the other disc to the centre of the case bottom, and indicate the centre with a bradawl. As ease of movement and balance depends largely on these two discs, make positive that the screw heads do not interfere by rubbing across the surface with a flat file. A smearing of candle tallow will do a lot to ensure grace of movement.

Turn the work upside down when pivoting the feet, and have a small metal washer coming between the screw head and foot rail as shown.

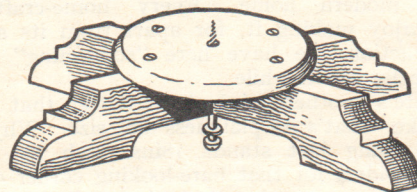


Fig. 4—The feet assembled

The small drop doors of the cupboards are cut from $\frac{1}{2}$ in. stuff and planed to fit neatly in the apertures which measure $7\frac{3}{4}$ ins. long by 3 ins. in width. Two 1 in. long brass hinges (Hobbies heavy variety) are sunk flush with the lower edges about 1 in. inwards from the ends.

Allow the "knuckles" to project a little forward, and before screwing in position, drill a $\frac{3}{16}$ in. hole of adequate depth in the middle of the top edges of both doors for the ball catches supplied. Grip the doors in a vice to do so. Knock the catches in with a mallet, or failing this, use a hammer and provide yourself with a piece of scrap wood to prevent damage to the casing.

Doors and Catches

The doors should be screwed to show a slight break at the front. Pieces of plywood about 1 in. by $\frac{1}{2}$ in. serve as door stops. These must be "pinned" before gluing and pressing against the case top inside. To obtain an even break, close the doors gently, open, and drive in the nails without shifting the position if possible.

The true position of the ball catch plates are another point of importance. Same is usually found by blackening the ball with oil-stone grease and closing the door. This will give the "spoor" ending. The "inlet" hole for the catch plate can thus be made with a bradawl and the plate screwed directly over the same.

HOW TO MAKE A TENT

THE tent shown at Fig. 1 can be made without a sewing machine, as all its seams are made with a waterproof cement.

A tent of this description if properly made, will stand the weather well and give good service.

In making the tent, use 8 or 10 oz. army duck which can be bought in a variety of widths. As many windows may be added as the individual may desire. They should be made interchangeable with frames of light metal sheet. Pyrolin answers very well for these windows. They pack easily for transportation and yet are very efficient in keeping out the wind and rain.

The cement used for making the seams is called liquid Latex. It is a raw milk-like juice of the rubber tree and is usually obtained at a rubber store.

There are some other cements which would do the purpose but straight latex is the best.

The Canvas

Canvas is always obtained about 30 ins. wide and when making up the top (Fig. 2), and sides and the front (Fig. 3), several widths will have to be joined together to get the proper size for the tent.

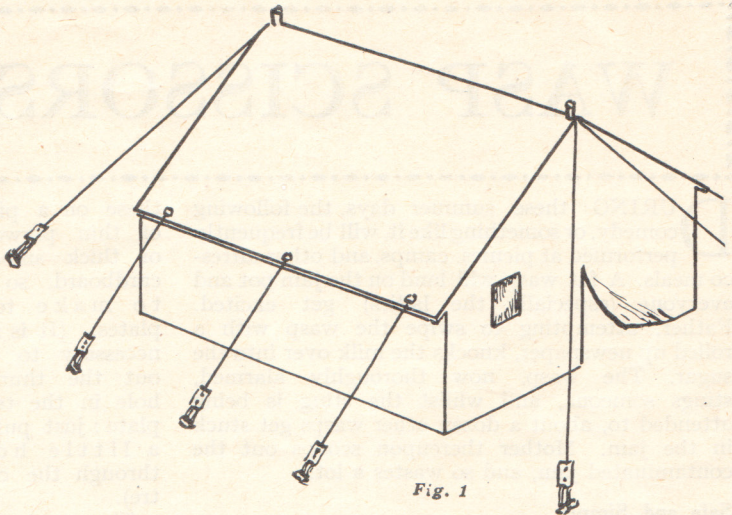
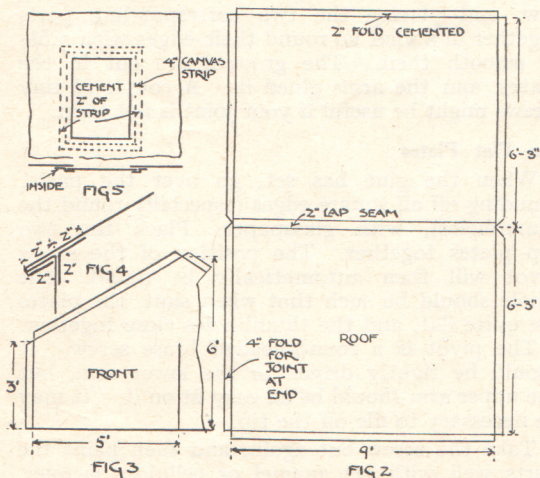


Fig. 1

Plain lap seams may be used to join those widths. Lap the edges zins., which is all that is required. When making a seam, thoroughly wet both parts of the canvas to be lapped with the cement. Allow the cement to dry 2 or 3 minutes, then place the pieces together and press down firmly.

Fig. 4 shows how the front is cemented and folded together at the junction of the roof and sides. Making the fold in this way, gives a 2 inch water drain and a firmer support for the grommets to which the guy ropes are attached.

Interchangeable Windows

This joint should be further strengthened by reinforcing with a 4 in. strip cemented on the inside.

The windows should, as mentioned, be made interchangeable. The metal frames which hold the pyrolin sheets are made by taking a 2 in. strip of No. 26 galvanized iron. Fold this double, placing the pyrolin in the fold.

A drop of solder at each end holds the metal strips together. The corners should be slightly rounded with a file so the windows will slide into the window pocket easily.

The Frame

To cut a window frame in the tent wall (see Fig. 5), make the opening approximately 4 1/2 ins. shorter than the length and width of the window frame. Then take a 4 in. strip of canvas and cement on the inside of the opening as shown at the cover plan, Fig. 5. Allow a 2 in. pocket into which the window will slide, this makes a perfect storm-proof window.

When the canvas for the tent has been cemented together at the joints, the sockets for the two tent poles and guys are finished off and the guy rope mounted.

Making a small Seaside Float with next week's issue. Be sure to get your copy early!

WASP SCISSORS!

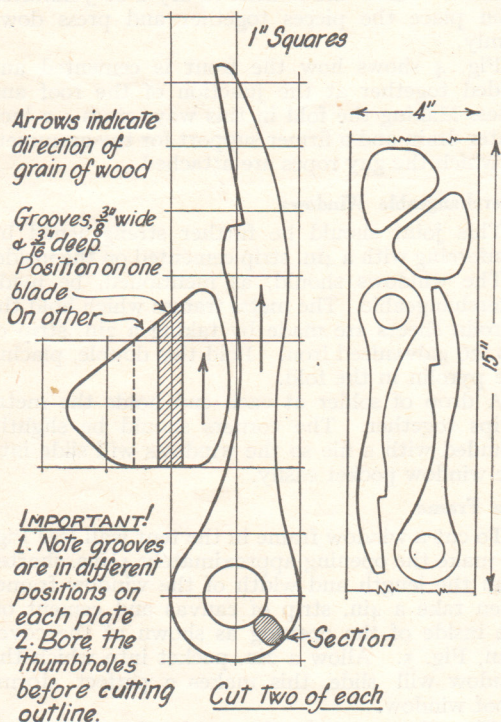
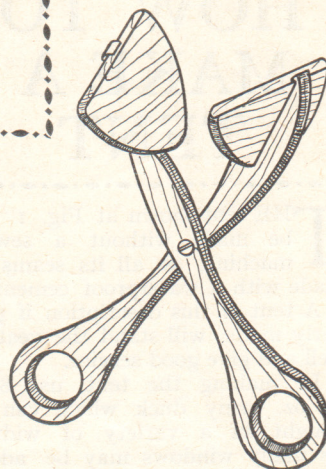
DURING these summer days, the following comedy, or something like it, will be frequently performed at picnics, camps, and other alfresco meals. A fat wasp will land on the jam pot and everyone (especially the ladies) get excited. Father, attempting to swipe the wasp with a rolled up newspaper, knocks the milk over into the sugar. The wasp, now thoroughly alarmed, stings someone, and whilst the sting is being attended to, about a dozen other wasps get stuck in the jam. Mother thereupon scoops out the contaminated jam, and so wastes a lot.

Safe and Simple

Now, if you only had the pair of wasp scissors shown in the drawing, you would not have all this bother. One little nip, and the wasp is quickly, cleanly, and humanely extinguished. You can

these on a piece of thin plywood or thick smooth cardboard, so as to make templates. (It is not necessary to cut out the thumbhole in the template: just punch a little hole through the centre).

The wood used is White Chestnut, $\frac{3}{8}$ in. thick. From the smaller diagram, it will be seen that the whole of the parts required can be got on a strip 4 ins. wide and 15 ins. long. Before cutting out the outline cut the thumb holes, preferably by boring with a rim. centre-bit. If this is done after the cutting, you are practically sure to split the wood.



The Important Groove

Here is another very important point. On each plate, there is a groove $\frac{3}{8}$ ins. wide and $\frac{3}{16}$ in. deep. Owing to the fact that one arm of the scissors is on top of the other (i.e. $\frac{3}{8}$ in. higher) the grooves on the plates are *not* in the same position on each part.

Cut the outlines, using a thick "toymakers" sawblade in the ordinary fretsaw frame, or coping saw, and placing the two corresponding parts together in a vice, go round their edges with a file to smooth them. The grooves are cut in the plates, and the arms glued in. A couple of tiny screws might be useful if your joint is not tight.

The Flat Plates

When the glue has set, go over the parts, rounding off all square edges (especially round the thumbholes), with glasspaper. Place the two top plates together. The position of the screw pivot will then automatically be found. The whole should be such that when shut, the plates are quite flat, and the thumbholes close together.

The pivot is a round-headed brass screw. It should be tightly driven in the lower arm, but the upper arm should be an easy fit on it. It may be necessary to file off the tip.

Take the screw out again, and then paint the parts well with art enamel or cellulose lacquer. Upon reassembling, the scissors are now done and ready for the instant slaughter of any wasps venturing within reach.

make a pair in one evening, at very little cost. They sell very well, too, among friends and neighbours, or at sales, etc.

The first thing to do is to draw the shapes of the sides and plates full size. This is easily done by making a framework of 1 in. squares. Draw

Enter our Photographic Competition and win a prize

SOME PRACTICAL HINTS ON CRICKET

The first of two excellent articles full of helpful illustrated tips. This one deals with bowling and fielding.

HERE are some helpful hints which will enable you to pile up a score like those dreams of imaginary centuries and taking wicket after wicket.

Begin with bowling. Erect your stumps, mark your crease, pace out your pitch and begin. Hold the ball in your fingers, not in the palm of your hand, and get your third finger round the seam. Circle your arm from the shoulder several times to loosen your shoulder joint. Next, one or two preparatory runs to the wicket, with an imaginary delivery, until you have got back comfortably into your stride. The first important points to concentrate on are :—

1. Let go of the ball when the body and arm are at the highest stretching point. See photograph 1.

2. Make a good delivery by completing the circular movement of your arm, and continue your run one or two steps over the crease. The pace at which you deliver the ball depends upon the speed of your preparatory run, and the speed of your arm action in delivery. A fast bowler uses a longer, faster run, and has a swifter arm action than a medium or slow bowler. He also likes a dry, hard pitch and a new ball.

Bowling Tips

A good length ball deceives the batsman into thinking that he can step forward to it and hit it for four. He does, only to find it has pitched just short of his reach. He has edged it and is caught, or he has played either inside or outside

it and his stump is somersaulting into the wicket keeper's hands.

Every bowler must be able to keep a good length ball, and the best way to practise it is to put a mark just where the batsman cannot reach, and

try to make an average of ten out of ten balls pitch on the mark.

Having got your length now learn to "spin" your ball. You can use either a leg break or an off break. A leg break is the term given to a ball pitching off the wicket on the leg side, but breaking on to the leg stump. To get the ball to do this you must hold it with your fingers round the seam and, as you deliver the ball, twist your wrist so that the thumb turns from right to left.

Your wrist action finishes with the little finger side of your hand uppermost. To make the ball break in on to the off stump from the off side of the wicket, you must hold the ball with your fingers round the seam and, as you deliver the ball, twist your wrist so that the thumb moves from left to right, finishing with the palm of your hand uppermost.



In break bowling a good length is important, so again find the spot outside the leg and the off stumps where the ball must pitch, and keep up that average of ten out of ten when you practise. Remember also that the ball must come off the pitch at a good pace; a sure sign of a tired bowler is loss of pace off the pitch.

A Googlie

To bowl a googlie you must deliver the ball from the palm of the hand. Twist your wrist, as for a leg break, and the ball will perform an off break. You will find this needs considerable practice.

Try bowling one or two fast yorkers. These bound on the crease and, if your batsman takes one of these to be a half volley (as you hope), the ball will go underneath his bat and you will have another wicket to your credit.

Slow and medium-paced bowlers will find it useful to get variation in height of the ball. This is done by loosening the grip on the ball. Every bowler, no matter what his pace, will want to be considered a cunning bowler, and this will come only with practice and some thought.

The Break

For instance, do not use too much break. The batsman will watch your hand and, seeing the obvious twist, will not be deceived. When you can be sure of sending up a good length ball you can try one or two not such good lengths to encourage your batsman to step out before you send him your best break.

A word here about fielding will be helpful. Go into the field prepared to do a great deal of work. Therefore keep your weight balanced more on your toes than on your heels.

In the deep field be ready for a quick sprint in towards the wicket, keeping your eye on the ball so that you can gather it up as you run, and go on running as you throw in. The photograph will show you a good position of the hands and body as you pick up.

Throwing In

For throwing in keep the ball in your fingers, not in the palm of your hand. Your left arm must give you the direction in which the ball is to be sent. Throw the ball in a sideways, upwards direction—(see the photograph)—it is not good enough to let the ball bound before it reaches the wicket keeper or bowler. You must aim into his hands level with the balls on the wicket.

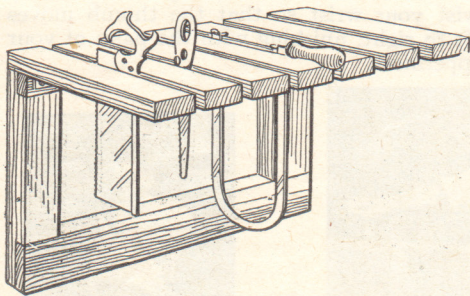
When you are running in for a high catch do not rely on your hands only, but hug the ball to your chest, when you have grasped it, and immediately throw in. The fourth photograph shows this clearly.

The Slips

For fielding in the slips you will find it necessary to be well on your toes, with your feet a little apart, and your hands cupped down ready to hold the ball. Catches glancing off the bat are upon you here in a moment. You need to watch the ball right from the bowler's hand, on to the bat, and off again into your hands.

As a wicket keeper you take much the same crouch as in slips. Perhaps a little more so, since you must watch the ball just over the level of the wicket. For a fast bowler the wicket keeper will stand a longer distance from the wicket; but do not overdo this. Get to know the type of bowling you are backing up.

(To be continued)



HERE is a useful rack for your saws, and the idea is much better than laying the tools down in some odd corner or leaving them untidily on the bench. Again, by placing the saws in the rack after use they are out of the way, and at the same time can be selected at will when required.

The rack is quite simple and quickly made from stripwood or fretwood in the following manner. Cut off two pieces of $1\frac{1}{2}$ in. by $\frac{3}{4}$ in. stripwood 12 ins. long as indicated at A Fig. 1, and carefully half

A SAW HOLDER

lap the ends as shown in the sideview. Cut two pieces of the same size stripwood $9\frac{3}{4}$ ins. long as indicated at B, and half lap the ends also.

Fix the strips thus cut into the form of a frame which is secured firmly to the wall in the work-room.

Now cut off seven pieces of $1\frac{1}{2}$ in. by $\frac{3}{4}$ in. stripwood 7 ins. long, and fix these along the top of the frame as shown in the finished article.

This will give an opening of $\frac{1}{4}$ in. between each strip for the saws. In order to give the rack support, it is a good plan to fix a small angle plate under each strip on to the frame.

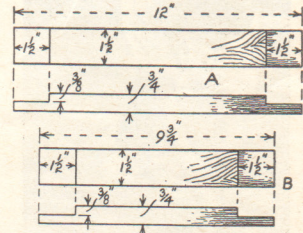


Fig. 1—The rack parts

AN OCCASIONAL TABLE

THE attractive side table shown in our illustration would make a useful addition for a room or hall. It has a very useful drawer, the moulded front of which gives the whole a decided touch of character. With very little extra trouble and material, the front could be formed to take two drawers. That is, a partition could be fixed centrally between the two ends and the runners arranged each side for the drawers to slide upon.

The construction of the two drawers would be the same as shown here for the long single drawer, and the moulding, which adds so much to its appearance, mitred round just the same on all four edges.

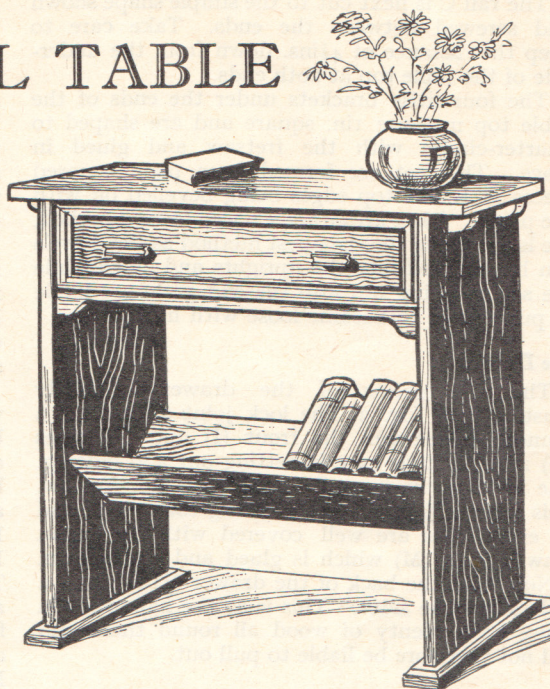
The book trough is useful in depth, and when filled will keep the table steady and firm.

Made in Oak

The table would look well made from oak, but some workers would prefer a softer wood to this such as satin walnut. We give a comprehensive cutting list which will be found most useful when work is commenced upon the table. All parts are shown lettered in the details here, and by referring to the list, the measurements and thicknesses of each part can be clearly read.

In making up the table, commence with the two end uprights, by cutting them to the exact length and seeing that the ends are square.

Lay one piece flat on the table or bench and set up a distance of 7 ins. on a line drawn through the centre of the board. From this point, and with a 45° set-square, set out the positions of the boards



forming the trough as seen by the dotted lines in Fig. 1.

Mark and bore holes as shown for the fixing, and then lay the second end board under the finished one and mark through where the holes come. Thus, both ends will be alike and stand square and even.

The two pieces forming the book trough are of the same width, and are butted together, and glued and screwed, as shown in the enlarged detail in Fig. 1. See the ends of the pieces are square and true before screwing them between the ends.

The Top

The table top must be prepared with properly square-cut ends, and a distance of 1½ ins set back from each end, these lines marking where the uprights will come. Screws are used as fixing for the top, the countersunk heads being afterwards neatly filled with plastic wood and glasspapered level.

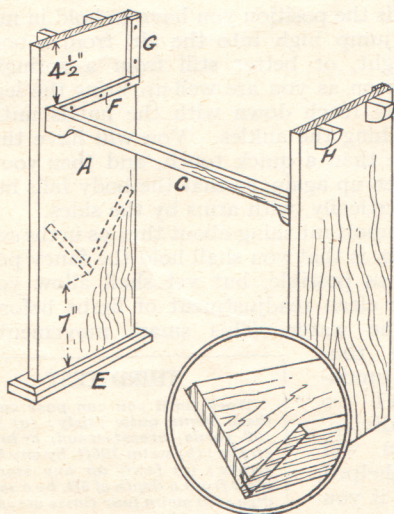


Fig. 1—The ends and a detail of trough

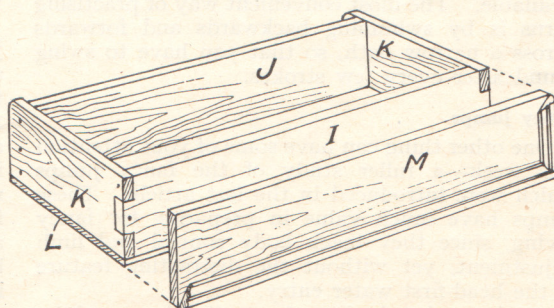


Fig. 2—The drawer with front away to show detail

The rail C is next cut to the simple shape shown and screwed between the ends. Take care to keep the distance of $4\frac{1}{2}$ ins. down from the underside of the table top at both ends.

The four little brackets under the ends of the table top measure 1 in. square and are shaped to quarter-circles with the fretsaw and glued in place. The feet are formed from plain squared pieces as E, the top edges being bevelled off with the plane. They are either screwed on or doweled, the latter being the strongest method as the dowels can be run well into the uprights and glued, while the screws being run into the end grain are liable to pull out or to become loose with handling.

The Drawer

The construction of the drawer is clearly illustrated in Fig. 2. The lock joint adopted as a connection between the front (I) and the sides (K) needs a little care in setting out and cutting. The latter is most easily done with the fretsaw. This form of joint makes a strong connection and its end grains are well covered with the main drawer front (M) which is glued and screwed on.

Note that the back of the drawer (J) is set in a little along the sides. This is so the nails used in fixing have plenty of wood all round them and will not therefore be liable to pull out.

Ornamental Edging

The four pieces forming the frame of the drawer should first be put together and the plywood bottom then nailed on, the main front being

finally attached. Around the front of the drawer the moulding (No. 303) is mitred and glued and pinned on as shown in the diagram. Two pieces of the moulding are outlined in this picture to show its application.

Two runners (F) for the drawer are screwed on with their top edges level with the front rail (C) as shown. At the back edges of each upright is fixed two stops (G) these being put on to prevent the drawer being pushed through too far.

If the table has been made in oak it should be stained to the desired depth and afterwards either french polished or oiled. Hobbies Lightning Polish cannot be excelled for this job, and bottles can be purchased as cheaply as 6d. each. Oak stain can be got for 6d. per bottle.

If satin walnut has been used, then a stain might be applied and a finish of Lightning Polish given. Two very suitable handles for the drawer are Hobbies No. 6213 at 7d. each, or if drop handles are preferred No. 539 at 5d. each.

CUTTING LIST

- A—2 pieces 24ins. by 9ins. by $\frac{1}{4}$ in.
- B—2 pieces 19ins. by 5ins. by $\frac{1}{4}$ in.
- C—1 piece 19ins. by 1ins. by $\frac{1}{4}$ in.
- D—1 piece 24ins. by 10 ins. by $\frac{1}{4}$ in.
- E—2 pieces 10ins. by 1ins. by $\frac{1}{4}$ in.
- F—2 pieces 8ins. by $\frac{1}{4}$ in. by $\frac{1}{4}$ in. deal.
- G—2 pieces 4ins. by $\frac{1}{4}$ in. by $\frac{1}{4}$ in. deal.
- H—1 piece 4ins. by 1in. by $\frac{1}{4}$ in.
- I—1 piece 19ins. by 4ins. by $\frac{1}{4}$ in. deal.
- J—1 piece 19ins. by 4ins. by $\frac{1}{4}$ in. deal.
- K—2 pieces 7ins. by 4ins. by $\frac{1}{4}$ in. deal.
- L—1 piece 19ins. by 7ins. by $\frac{1}{4}$ in. plywood.
- M—1 piece 19ins. by 4ins. by $\frac{1}{4}$ in.
- 2 pieces moulding No. 303, 20ins. long.
- 2 pieces moulding No. 303, 4ins. long.

Swimming—(Continued from opposite page)

approach and the actual turn. There only remains the push off and glide.

Fling the arms backwards over the head, in their ordinary recovery movement, and at the same time push from the feet with fullest vigour, straightening the legs and the entire body. Then, before impetus has died down, take up your stroke again.

Practise for Speed

Practise these three turns dozens of times, until the speed of your swimming is not at all checked when you reach the bath end. If there chances to be a rail on the wall you may prefer to grip that to make your turn, but it is better to be independent of rails, for they are not always available. The most convenient way of practising turns is by swimming backwards and forwards across a narrow bath, so that you have to swing round after every few strokes.

Fancy Jumps

One other thing can have some of your attention this week—a fuller study of the fancy jumps which were introduced in the last article. These jumps have much value in preparing for fancy diving, since they teach body control and limb adjustment, yet without the distracting feature of the head-first water entry.

You have already done the swallow jump and the splosh. This latter will make easier the jack

knife jump. You may try out the jack-knife position by standing on the bank, keeping the knees stiff, and bending forward until the fingers can touch the ankles—right hand on the outer side of the right ankle, and vice-versa. The head should be kept up.

A Jack Knife Jump

That is the position you have to hold in mid-air. Now jump high into the air, from a board of fair height, or better still from a springboard, and as soon as you are well up, bring the legs forward and reach down with the hands until you are touching the ankles. You will have time for no more than a quick touch, and then you must straighten up again, so that the body falls into the water vertically, with arms by the sides.

The important thing about this, as in the swallow jump too, is that you shall hold the fancy position as long as possible, but yet shall allow yourself time for clean readjustment of limbs before you reach the water. This smart movement and accurate timing is fundamental to fancy diving, and you will be much helped later on if you gain experience now.

THIRD TEST

Work until you can pass each of these items quite fairly: (a) swim 100 yards, breast-crawl, or breast-stroke; (b) swim 100ft. by any back-stroke; (c) fetch up any stone or plate from a depth of 5ft. by a surface dive; (d) swim four times across the bath, making a proper turn each time.



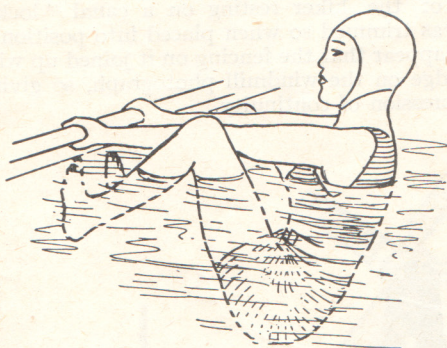
MOST swimming nowadays is done in artificial pools of comparatively small size, and with hard, upright sides of concrete or tiles. This has made necessary for the modern swimmer the ability to turn neatly and easily without setting foot on the bottom. If you want to swim even a hundred yards in the average bath you will have to turn several times at the pool end.

It is well worth your while therefore to give a few days to the mastering of this turn, for like all other parts of watermanship it has a technique of its own and cannot be picked up in haphazard fashion.

The bath turn has three distinct parts—the approach to the wall; the swinging round of the body; the take-off from the wall. These all form part of a smooth, continuous movement. For every different swimming stroke, of course, the turn too is different, though it consists of the same three parts, and is the same in principle. As the most useful turn is the one used with breast-crawl, you had better begin with that.

The Arrival

Swim straight at the wall of the bath, without slackening your speed at all, or altering your stroke. Only one thing needs special attention in this approach—you must arrive at the wall with one arm at full stretch in front. You will be able to judge whether your stroke is going to fit in exactly. If it is not, do not try to rush in an extra arm



Last part of (a)

movement—the best way is to keep one arm out at full stretch and glide on to the wall in this position, keeping your legs thrashing. You must arrive at the wall with the palm of the hand so turned that it can be placed flat, with the fingers pointing downwards, just below the surface of the water.

Then comes the actual turn. Suppose your

TURNING IN THE BATHS

right hand is against the wall. Your left will make a deep scooping sweep down under the body, which, together with turning the head and the pressure of the right hand, will cause you to spin round to the left—providing the legs are drawn up.

The doubling up of the legs under the body is in a sense the conclusion of the approach. Clearly the body will swing round more easily the shorter it is, as this drawing up movement is very important. As the spin is made, a good breath should be taken.

At the conclusion of the spin, the feet will be placed on the bath side, close under the right hand, and the hand will be drawn away and brought up in front of the head alongside the left hand. This is the beginning of the push, which is the third and concluding part of the turn.

End of the Turn

The head is dipped and both arms are pushed to full extension at the front. At the same time a strong push is made from both feet, against the bath end, the legs straightening out like steel springs, so that you shoot away just under the surface in a clean, smooth glide. This fast glide should carry you a few yards. Then, when impetus is slackening, the legs begin their crawl thrash once more and a moment later the head is lifted and the whole stroke is taken up.

It has taken some time to describe the process of turning; in practice the whole thing is over almost in a single quick flick of the body.

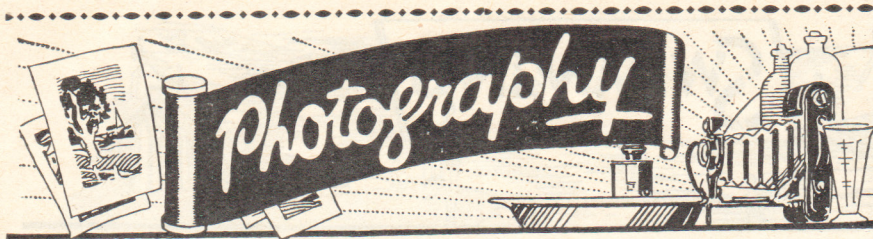
Breast and Back-Stroke Turns

For the breast-stroke swimmer the turn is exactly the same, except that both hands should reach the end of the bath together.

The back-stroke turn is less easy. Supposing you are using overarm back-stroke. One of your hands will arrive at the wall, the arm being at full stretch beyond the head. The other arm, at the same moment swings upward and over, across the body and so rolls you until you are upright in the water and facing the bath end. This free hand then places itself by the other in position.

During this roll, the legs will have drawn up in front of you and now the knees will be close to your chest and the feet placed against the wall, close under the hands. That completes the

(Continued on opposite page)



MOST readers will be familiar with the usual type of photographic statuette which is so effective, and yet so easily made by the fretworker. Having chosen a suitable snapshot from his collection, the worker obtains a post-card size enlargement, glues it flat on a piece of fretwood and cuts round the outline with the aid of a fretsaw.

Black the Edges

All that then remains to be done is to stain the edges of the cut-out with Eggshell Black and mount it on a simple base of fretwood or moulding.

Holiday snapshots provide many suitable subjects for this type of work and here is a new suggestion for their treatment.

When you get back from your holidays, look through the photographs you have taken and pick out about half a dozen of the best. Then instead of making a separate statuette of each, combine them all in one continuous cutout forming a composite picture such as that shown in the illustration.

Suitable Parts

Some little care will, of course, be necessary in executing this work, but it is a fascinating occupation arranging the pictures and trying to fit them together to obtain the best effects. And as long as one is careful to see that adjacent photographs do not contain objects shown hopelessly out of proportion compared with one another, it is not necessary to bother over minor discrepancies.

Having decided which photographs are to be used, and in what order, they are glued into position on a panel of fretwood and cut out in the usual manner.

A statuette so made makes a suitable ornament for a bedroom mantelshelf, and provides one of the best souvenirs of a holiday.

Every type of holiday provides plenty of

suitable subjects and the illustration shows how a composite statuette was made from six snapshots after a hiking tour.

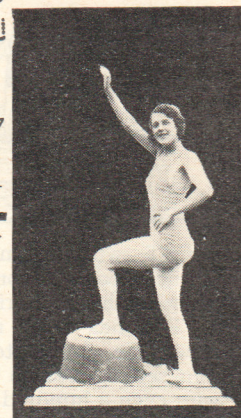
It will probably be of assistance to readers to know just how this was built up. A photo of the writer "en route" was chosen to occupy the position at the end, as the figure gives the picture a hiking "atmosphere" and appears to be surveying the panorama of objects on its right.

The Subjects

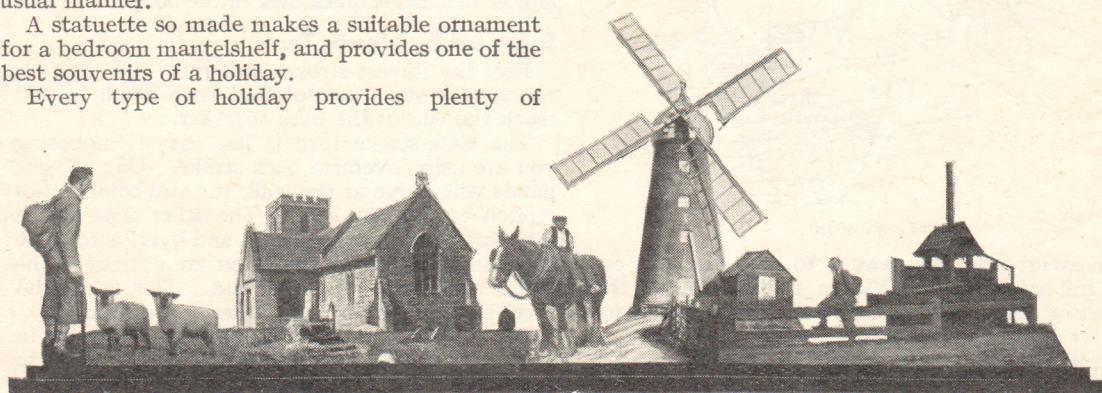
The first of these was a quaint old village church, but if the two photographs had been placed close together, the figure would have overtowered the building with ludicrous effect. But when a picture of some sheep was placed between them the church was given the appearance of being further in the background and not at all out of scale.

Correct Proportion

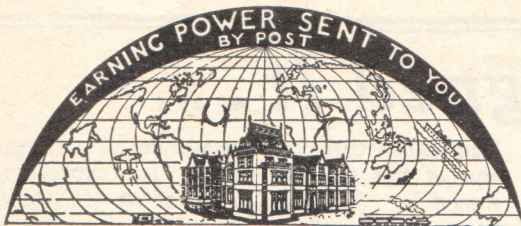
Another of the principal photographs was one of a picturesque old windmill, and as the road at the foot of this appeared rather bare, a snapshot of a labourer on a horse was inserted between the mill and the church. There then remained the photograph of the hiker resting on a canal "lock." This was trimmed so when placed into position it would appear that the fencing on it joined up with the hedge on the windmill photograph, so giving an impression of continuity.



A typical holiday snap cut-out as a ring holder



An excellent example of a composite cut-out picture described herewith



OPEN LETTER TO Mr. SOMEBODY & HIS SON

Dear Sir,—The natural desire of most parents is to give their children a fair chance in life in the form of a good College Training, also there are many young men who would like to go to College, but for some reason are not able to do so. Let us tell you here and now, you can get a Complete College Training without having to go anywhere, and at a reasonable monthly fee for tuition. For well over 30 years we have been training students for all the Key positions, by post, in all parts of the world. Distance is nothing when you are studying by your own fireside.

The nature of our business makes us keep in touch with employment requirements, therefore we specialise in preparing students for the good positions which we know exist, and for all the worth while examinations.

Write to us for Free particulars of any subject which interests you, or if your career is not decided, write and tell us of your likes and dislikes, and we will give you practical advice as to the possibilities of a vocation and how to succeed in it.

You will be under no obligation whatever, it is our pleasure to help.

J. Bennett

DO ANY OF THESE SUBJECTS INTEREST YOU ?

Accountancy Exams.	Concrete and Structural Engineering	Pumps and Pumping Machinery
Advertising and Sales Management	Draughtsmanship.	Radio Service Engineering
A.M.I. Fire E. Exam.	All branches Engineering.	Radio Communication.
Applied Mechanics	All branches, subjects and examinations.	Road-Making and Maintenance
Army Certificates	General Education	Salesmanship, I.S.M.A.
Auctioneers and Estate Agents	G.P.O. Eng. Dept.	Sanitation
Aviation Engineering	Heating and Ventilating	Secretarial Exams.
Banking. Boilers	Industrial Chemistry	Shipbuilding
Book-keeping, Accountancy & Modern Business Methods	Insurance	Shorthand (Pitman's)
B.Sc. (Eng.)	Mathematics	Structural Engineering
B.Sc. (Estate Management)	Matriculation	Surveying
Building, Architecture and Clerk of Works	Mining, all subjects	Teachers of Handicrafts
Cambridge Senior School Certificate.	Mining, Electrical Engineering	Telephony and Telegraphy
Civil Engineering	Motor Engineering	Transport Inst. Exams.
Civil Service	Motor Trade	Weights & Measures Inspector
All Commercial Subjects	Municipal and County Engineers	Welding
Commercial Art	Naval Architecture	Wireless Telegraphy and Telephony
	Pattern Making	Works Managers
	Police, Special Course	
	Preceptors, College of	

If you do not see your own requirements above, write to us on any subject.



Dept. 62 THE BENNETT COLLEGE, SHEFFIELD

MAKE AND SHOW YOUR OWN MOVIES AT TRIFLING COST

Combined Motion Picture Camera and Projector, 9.5 mm. Fitted with TAYLOR-HOBSON F/2.5 lens. Not a toy. Exceptional Bargain. Usual price 7 gns. **OUR PRICE 45/-** post free. Complete with batteries and ready for use. Write immediately, only a few left.

ATELIERS 6/7 Gt. Castle Street
Oxford Circus, W.1.



A midget named Timothy Trick
Said "Fluxite is handy and quick ;
The neat 'small space' set
Is the outfit I get—
And it costs only 'seven-and-a kick' !"

See that FLUXITE is always by you—in the house—garage—workshop—wherever speedy soldering is needed. Used for 30 years in Government Works and by leading Engineers and Manufacturers.

OF ALL IRONMONGERS—IN TINS

4d., 8d., 1/4 and 2/8

Ask to see the FLUXITE SMALL SPACE SOLDERING SET—compact but substantial—complete with full instructions—7/6

Write for Free Book on the Art of "SOFT" SOLDERING and ask for Leaflet on CASE HARDENING STEEL and TEMPERING TOOLS with FLUXITE.

TO CYCLISTS ! Your wheels will NOT keep round and true unless the spokes are tied with fine wire at the crossings AND SOLDERED. This makes a much stronger wheel. It's simple—with FLUXITE—but IMPORTANT.

THE FLUXITE GUN

is always ready to put "Fluxite" on the soldering job instantly. A little pressure places the right quantity on the right spot and one charging lasts for ages.

Price 1/6



ALL MECHANICS WILL HAVE

FLUXITE

IT SIMPLIFIES ALL SOLDERING

FLUXITE LIMITED, Dept. H., Dragon Works, Bermondsey St., S.E.

DESIGNS

Save money on designs. Buy them in book form. Book A (as shown) contains 20 designs. Book B, 20 ; whilst C and D Books have 14 each of larger subjects.



68 for 3/-

Postage 3d.

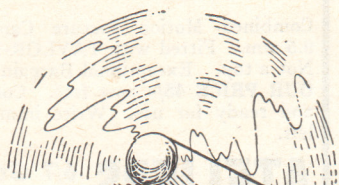
Separate books 9d. each (post 1d.) from Hobbies Ltd., Dereham, Norfolk.

An Expert Designed It...

3ft. 10in.

Wing Span

14in. "Prop"



Hobbies Ltd., Dereham,
Norfolk and Branches

You will be thrilled at the wonderful performance of this splendid model. An expert designed it. From tip to tip of its 3ft. 10ins. wing span it reflects the touch of a master hand. Remember, this is no midget.....but a model you will be proud to fly anywhere. The kit of parts costs only 19/6 and is really cheap at the price. Start building it NOW!

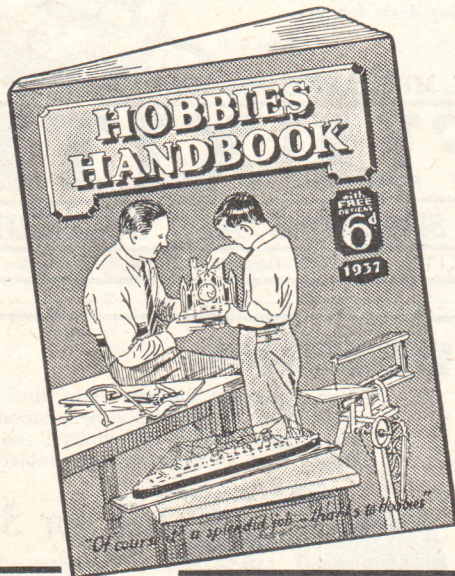
Build it from this Kit

The Kit includes 14in. Airscrew, balsa, spruce, birch, gears, piano wire, 1½ yds. Jap Silk, "Durofix," 20 yds. strip rubber, etc. and costs only 19/6; postage 6d. The design chart and instructions cost a further 6d.

A Flying Model

LOW-WING MONOPLANE

Just Out...



Here it is! The 1937 edition of our popular Handbook. 268 pages of ideas.....suggestions... ..money-making opportunities for the fellow who likes to make things in wood. You get free gift designs value 2/6 with every copy. The best sixpennyworth you can buy. From all book-sellers, Hobbies Branches and Agents or direct from Hobbies Ltd., Dereham.

6^{D.}

9d. by post
from Dereham

Get Yours
NOW!

Hobbies 1937 Handbook

The AMATEUR

ELECTRICIAN



AS an introduction to this article we must make one or two apologies. The first is to those readers who have been waiting patiently for some of these notes, and secondly for the arrangement of the article. It is not possible to compile a dictionary of electrical terms, hence we have only made notes of very common terms which are frequently used by readers, and have only included what we think to be relevant matter.

If there is anything that is not clear, a note to your Editor will bring a reply. The real purpose of these notes is to describe briefly the theoretical aspect of our work.

NOTES OF GENERAL INTEREST

A.C.

This is the abbreviation for alternating current. The standard modern supply is at 250 volts 50 cycles which means that the polarity of the supply is changing 50 times a second. Another very important point to note is that the Peak Voltage is in excess of 230 and is actually $230\sqrt{2}$ or over 300 volts. It is this voltage which makes shocks very dangerous, so *never* touch a wire to see if it is live.

Ammeter and Ampere

The ampere is the unit of current and the ammeter is an instrument for measuring this current. An ampere is the current flowing and must not be confused with volts as "A current of 3 volts." Ammeters have been fully described in an earlier article. The moving coil and moving magnet can be used for D.C. only while the hot wire and moving iron can be used on both A.C. and D.C.

Battery

This is a collection of either dry cells or accumulators. A 4.5 volt pocket lamp refill is known as a battery in which there are three cells. A single lead acid accumulator is often referred to as a 2-volt cell.

Cable

This generally refers to wire used on commercial undertakings. They are heavier, i.e. carry more current than the wires we normally use. The cores in the larger sizes are multiple, and are designated as 3/029 which means three conductors of diameter .029ins. We advise readers to obtain

catalogues from electrical advertisers, to have wire tables, etc.

Most lists give the wire size—diameter—resistance per 1,000 yards, weight per 1,000 yards and yards per lb.

The capacity of a wire or cable is the amount of current it can carry without overheating. In transformer work we allow 1,200 amps per sq. inch, while for armatures running at high speeds as much as 4,000 is allowed. The reason for the difference is that the armature wires are ventilated by their movement while on a transformer they are enclosed.

Cut-out

Many readers have asked for details of the working of the cut-out on a motor car lighting set or on a dynamo charging set. The general idea is that the cut-out puts the battery out of circuit when it is fully charged.

This is wrong. The cut-out puts the battery on charge when the dynamo voltage exceeds that of the battery, and opens the circuit when the dynamo slows down and its voltage is less than that of the battery. It consists of two coils of wire, a fine high resistance shunt coil and a series thick wire coil.

The connection for a simple type is shown in Fig. 1. The fine wire coil is connected in parallel with the dynamo and the series coil in the main lead. Take care with the polarity as it is essential that the current flows through in the correct direction. In some instruments, used in stationary plants, the shunt coil is short circuited when the dynamo cuts in, but in the majority of small installations this coil is on all the time; only a few milliamps pass.

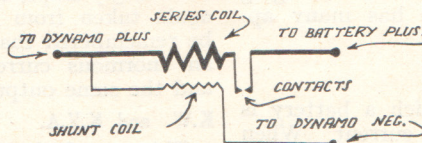


Fig. 1—Details of a cut-out

Converter

A machine for converting A.C. to D.C. or vice versa. Some small plants have both armatures on the same shaft and in the same housing, these are very neat and ideal for experimental work. There are two separate armatures and not one double wound one.

Larger plants consist of two separate machines, and one of our advertisers supply an excellent

plant for model railway work. It is very robust and has an ample output of 8 amps at 10-volts. Other names for these machines are rotary transformer and motor generators.

It might interest readers to know that while writing, our motor generator is running, and from here we can see the pilot light and switch board. The voltmeter shows 19 and the ammeter 7.

Other methods of converting A.C. to D.C. are by rectifiers such as the metal oxide and mercury arc. Particulars for making a tantalum charger have already been given in these notes.

Dynamo

A machine for generating electricity. The output can be either A.C. or D.C. Small machines as toy and cycle dynamos give an A.C. output, while those with a two-part commutator give fluctuating D.C. and in spite of many text books this current *can* be used for battery charging, etc. The armature may be either two or multi-pole; the two-pole is the shuttle armature and the other the cogged drum.

In the first instance the commutator has two segments; in the latter one segment to each slot or a variation of this depending on the winding, which may be either lap or wave.

In some machines for low voltages and high current outputs, a duplex or triplex winding is used. In this case there are two or three independent circuits which are in parallel and shorted through the brushes which cover two or three segments. The field magnets are generally bipolar, but in the large machines 2-4 and 6 or even more poles are used.

Several circuits are shown here. The series type is not often used; the simple shunt is very popular for small dynamos for cars and charging sets, while the compound type has many applications.

Discharge and E.M.F.

This refers to the rate at which a battery is being discharged or supplying current. When a battery is rated at, say, the 20 hour rate, it means that the battery gives its maximum capacity when discharged over a period of 20 hours.

The letters E.M.F. stand for electro-motive force as opposed to P.D. or potential difference, i.e. voltage.

Fuse

This is a safety device which melts and opens the circuit when an overload is thrown on it. In replacing a fuse follow out these instructions to the letter. Switch off at the main and find

the reason why the fuse blew and rectify it, i.e. remove faulty apparatus and check connections. Now take the fuse carrier from its box and remove all traces of the old wire, as well as any oxide formed on the porcelain.

Replace the fuse with one of the correct value and switch on again. Make sure that your fuses are of the right size adequately to protect the apparatus in use.

For example, do not run a 2½-amp iron from a 15-amp plug with 15-amp fuses in series. A five amp fuse must be substituted and if you wish to run say a fire and a small immersion heater from the above plug, then use a safety adaptor. In this there are two extra fuses to blow at five amps to protect the heater.

Heating

Several readers have been puzzled over the heating effect of an electric current. This depends on the current passing and the resistance of the circuit i.e. $C^2 Rt$ where C is the current, R the resistance and the time in seconds. A simple formula for determining the current necessary for a heating element is

$$C = \frac{H}{.24 Vt} \text{ where}$$

C—Current in amps.
H—Heat in calories.
V—Voltage.
t—Time in seconds.

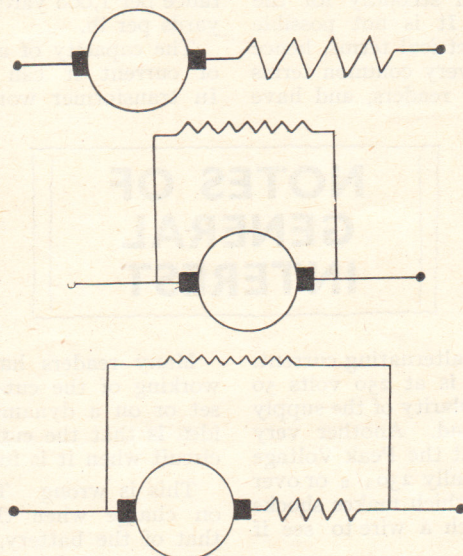


Fig. 2—Motor and dynamo connections—a series machine at the top, a shunt machine centre, and a compound wound machine at the bottom

A calorie is the amount of heat required to raise 1 grm of water 1°C. This means that the weight of water must be converted to grms and the temperature to degrees centigrade. It is usual to take the current to the nearest whole number; when it works out to a decimal place such as 3.7 amps, take it to be 4. Wire sizes are again taken from the makers' tables. It must be remembered that a heater for 6-volts requires an enormous current, while one for 200 volts and the same output only 2-amps.

K.W. and K.V.A.

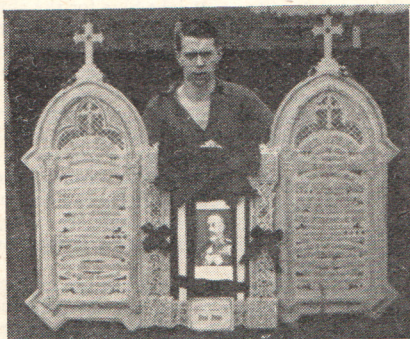
This stands for Kilowatt or a Board of Trade Unit. It is the unit upon which the consumer is charged—1,000 watts. Thus 100 watt lamp will burn for 10 hours or one unit, while a 10 watt night light burns for 100 hours.

These letters merely stand for kilovolt amperes. In alternating current systems the volts and amperes are not in phase, so the product expressed in watts does not give the true power. The ratio true watts to apparent watts equals the power factor.

(To be continued)

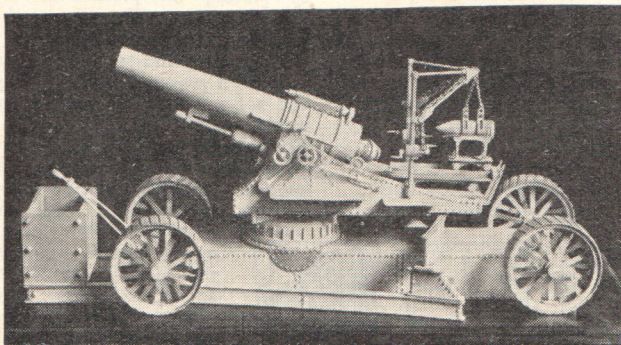
READERS' SNAPS

This page of pictures is not only interesting but also helpful, because it offers suggestions to other readers as to what are popular pieces of work to undertake. We are, remember, always pleased to receive suitable and unusual pictures (which should be as large as possible) and pay 2/6 for every one published in these pages.

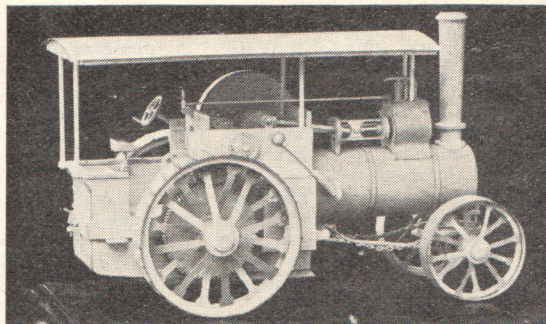


THE Lord's Prayer Design shown, won two first prizes in Wales for J. T. Difford of Ogmore Vale, S. Wales, and thoroughly deserved it. We supply the Welsh wording to fit our ordinary Design No. 5 Special from which the patterns shown are cut.

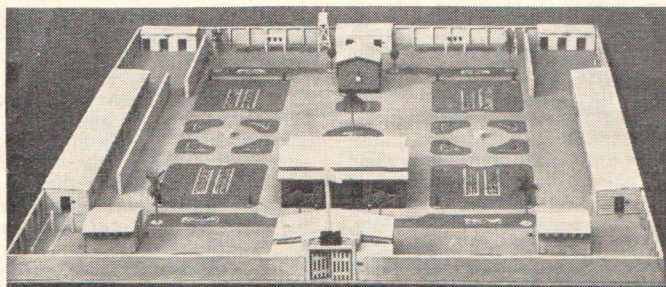
THE picture on the right is of an interesting model of a Hospital and grounds in Cairo. It occupies a space of 3ft. 4ins. wide and all rooms are illuminated by electric light from a battery in the base. It is, as nearly as possible to scale and was constructed by Labib Yousef Roufail of Charabia, Cairo.



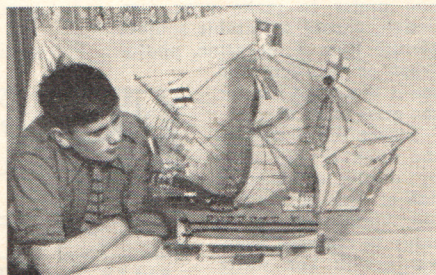
IT is not often we show two models made by the same worker, but the 12in. Siege Howitzer here is such a marvel of skill and patience that we felt readers would be interested to see it and to know that it was made by the same reader as the traction engine above. This model is perfect in every detail with 981 rivet heads and 18 spokes in each wheel!



THIS wonderful model of a Traction engine was built by C. F. Hallett of Dorchester to the scale of 3in. to 1ft. The boiler is of thin ply on a framework and there are 8 pinion wheels making up two speeds, reverse and final drive. The steering chain is made of individual links cut with a fretsaw and glasspapered up. Well done Mr. Hallett!



THE photograph below is one of several sent in by Kenneth Jones, aged 14, of Blackheath, London, and shows a wide range of fretwork which he has undertaken. Here you see him with the "Golden Hind" whilst he has also completed the model of "H.M.S. Nelson."





GLASS PANELS IN COLOUR



NOW is the time to begin if you have not already tried this fascinating new work of making sparkling colourful glass panels that glitter when they are hung up. They look so smart with an outline of solid black enamel, and the background filled in with many coloured tinfoils.

These panels are most effective for room decoration, and, too, for showcards, for when hung up or displayed in a window they gleam and sparkle and attract the eye of the passer by.

Illustrated are the kind of pictures which can be made by this method, and many other subjects can be treated most successfully in the same manner with splendid results.

The materials required to make the panels are few and simple. Some pieces of glass will be wanted; for smaller panels old photographic plates, well cleaned, will do quite well, or glass from photo or picture frames serve well for larger panels. Black enamel, coloured tinfoil paper—this can be collected from chocolate wrappings, biscuit boxes and so on—in silver and gold and all sorts of lovely colours. Tube glue, cardboard and fine paint brushes.

The pictures can either be framed afterwards or given passport bindings in black or colours.

Below is a series of small sketches telling exactly "how to do it," step by step.

First take a piece of glass, give it a good polish and free it from any trace of grease—a rub over with methylated spirit is the best thing for this. Unless you can, and prefer to make your own design, choose a suitable subject picture from a magazine, photograph or transfer, and see it is a good size for the glass to fit over.

Secure the design to the back of the glass by means of a small dab of glue at the two top corners—this can easily be removed afterwards with hot water—take the enamel, stir it well, and, using a

finely pointed brush go over the outline of the picture (Fig. 1) doing as much as possible at the top first to avoid any smudging, as it is essential to keep the outline very clean.

Vary the thickness of the line, and make some of the lines heavy and some light, according to what you are outlining, and fill in with solid black any parts that you think would look well. Notice in the largest picture the shading on the leaves is solid black in parts, as also the leafy sprays round the tree trunk, and the hedgerow.

When you think you have nearly finished the outline, lift up the glass and see how it looks without the picture behind it, and you will see how well you are getting on, and can add touches here and there where they are wanted, the picture will, of course be held fast by the glued corners, and can be dropped back in position again.

Any alterations of the enamel can be made by a judicious use of turpentine, applied on a small piece of rag wrapped round the handle of a paint brush, take great care to leave no smears where the corrections have been made. Now lay the glass aside to dry and harden, it is a good plan to put it in a box where it will be quite free from dust.

Take a piece of tracing paper and go over the design, as in Fig. 2. Any solid blacks can be left out—use a piece of carbon paper or rub the back with pencil to transfer the tracing on to a piece of cardboard the same size as the glass.

Now begin to fill the different spaces up with coloured tinfoil, and glue the different pieces, cut to size, in their right places.

Look at Fig. 3 and see the different colours have been numbered. 1. Bright blue for the sky, which goes over the greater part of the centre. 2. Deep blue green for the tree. 3. Silver for the cloud in the corner. 4. Lighter green for the grass in the foreground; this is a patterned tinfoil which often makes for variety in a design. 5. Reddish brown, and 6, a strip of mauve for the distant hill, both these last are fancy foils, with lines running down and across.

It is easy to cut the tracing up, for you can then cut the different pieces of tinfoil from the pieces thus obtained. In the event of overlapping, as for instance the sky and the green tree, this does not matter at all in some places, as the foil is so thin, and in other parts the thick black outline will cover a not too good fit of the pieces, though, of course, neatness and exactitude should be aimed at.

Press out all the tinfoil and see it is very flat, then leave the cardboard to dry. When both parts are ready and properly dry—but not before—fit them together by placing the glass over the design on the cardboard, and the result should be as in Fig. 4.

The enamel and brush can again be used if required to fill up any odd spots which look as if they would make an improvement, or increasing the thickness of some of the lines as the case may be, for, as the enamel is on the outside it does not matter. Let any corrections dry thoroughly before framing the picture, and when doing this make sure that the glass and picture are exactly over one another, and register correctly. Heads come well by this method. Paint the features solid black, then no difficulties are presented.



BLACK
OUTLINE



(2) TRACING
ON CARD



(3) COLOURED
PAPERS



FINISHED
DESIGN

MISCELLANEOUS ADVERTISEMENTS

The advertisements are inserted at the rate of 2d. per word prepaid. Name and address are counted, but initials or groups, such as E.P.S. or £1/11/6 are accepted as one word. Postal Orders and Stamps must accompany the order. They will be inserted in the earliest issue. To sell anything except fretwork goods or those shown in Hobbies Handbook. Orders can be sent either to Hobbies Weekly Advertisement Dept. 30/32 Ludgate Hill, London, E.C.4. or Dereham, Norfolk.

FREE, Scarce Rhodesia. Cat. 2/6 to applicants for ½d. approvals. Cox, 21 Dennis Mansions, Westcliff.

FRETWORK DRILLS from 8d., complete with extra drill points. All metal construction.—Hobbies Ltd., Dereham.

MOVIES AT HOME. How to make your own cinema Projector. Particulars free. Movie:cope (H) Pear Tree Green, Doddinghurst, Essex.

FILES FOR WOODWORK. A set of three costs only 2/3, post 4d.—From Hobbies Ltd., Dereham.

HANDY TOOL RACK, holds 12 tools. All steel, plated and polished. 1/3 only, post 4d. — From Hobbies Ltd., Dereham.

NAIL BOX with eight partitions and sliding lid. Made of seasoned wood. 1/8, post 4d. — From Hobbies Ltd., Dereham.

MITRE BLOCK with metal saw guides 10ins. long price 2/6, post 6d.—Hobbies Ltd., Dereham.

SMOOTHING PLANE, 5/6, post 6d. A real practical tool with 2in. double iron. Big value. — Hobbies Ltd., Dereham.

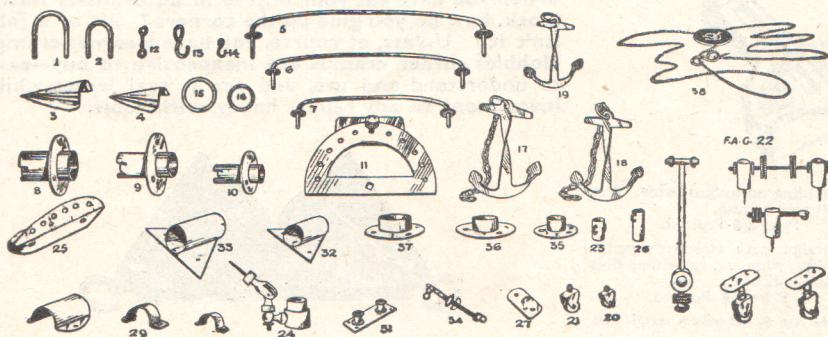
MINIATURE BOWLS. Play on the lawn or indoors. Set of four hardwood bowls, 3in., with jack and full instructions costs only 4/6, post 6d.—Hobbies Ltd., Dereham.

DOLL'S HOUSE PAPERS, from 1½d. sheet. Send for list.—Hobbies Ltd., Dereham.

YOU CAN GET THOSE SMALL WOOD SCREWS FROM HOBBIES. All sizes from ⅛in. round or flat head.—Hobbies Ltd., Dereham.

TRAY HANDLES from 3d. pair.—Hobbies Ltd. Dereham.

MODEL YACHT FITTINGS



If you are making your own model yacht, these are the fittings you need. They are nicely made and finished. Illustrated one quarter actual size.

1. Bowsprit Hooks	1 in.	1d. each.
2. Bowsprit Hooks	in.	2½d. "
3. Bowsprit Shoes	in.	2½d. "
4. Bowsprit Shoes	in.	2½d. "
5. Sail Horses	5 in.	4½d. "
6. Sail Horses	4 in.	4d. "
7. Sail Horses	3 in.	3d. "
8. Mast Steps	in.	8d. "
9. Mast Steps	in.	7d. "
10. Mast Steps	in.	6d. "
11. Course Selectors	10d.	"
12. Clews (hand-made brass)	6d.	doz.
13. Large Hooks	4d.	"

14. Small Hooks	...	3d. doz.
15. Large Mast Rings	...	4d. "
16. Small Mast Rings	...	3d. "
17. Anchors (Large)	...	4½d. each.
18. Anchors (Medium)	...	3d. "
19. Anchors (Small)	...	2d. "
20. Pulley Block	½ in.	4½d. "
21. Pulley Block	¼ in.	5d. "
22. F.A.G. Auto Steering Gear	5/-	"
23. Top Mast Tubes	...	3d. "
24. Main Boom Joints	...	2/- "
25. Bermuda Hook Plates	...	6d. "
26. Boom Jib Tubes, Eyed	...	3d. "

27. Deck Plates	...	2½d. each
28. Bowsprit Bands	...	1d. "
29. Bowsprit Bands	...	1½d. "
30. Bowsprit Bands	...	2d. "
31. Bollard	...	6d. "
32. Gammon Iron	...	6d. "
33. Gammon Iron	...	7d. "
34. Strainer	...	6d. "
35. Mast Steps	...	5d. "
36. Mast Steps	...	6d. "
37. Mast Steps	...	7d. "
38. Quick Grip Clews	...	3d. "
39. Quick Grip Clews	...	4d. "

If you order by Post, please add 1½d. extra for return postage.

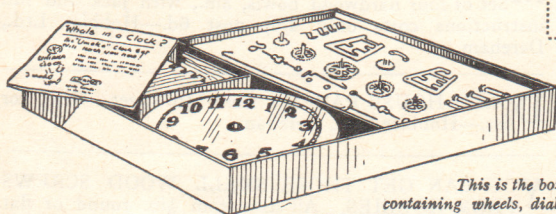
HOBBIES LIMITED, DEREHAM

Branches in London, Glasgow, Manchester, Birmingham, Sheffield, Leeds, Southampton and Brighton.

Build the "works" as well as the case!

No longer need you content yourself by making just the case of a clock. With this kit you can build the "works" as well!

Sounds difficult? Not a bit of it. You see everything is provided ready to assemble—gear wheels, pinions, clock face—all ready to go in place. You will like building the case, too, in the nicely grained mahogany supplied. You can complete the lot for 11/6! You **SAVE** while you build. Send for a kit to-day.



This is the box containing wheels, dial, weight, and all minor parts to complete the works. A book of instructions is included.

Sold as 50% British
—50% Foreign.

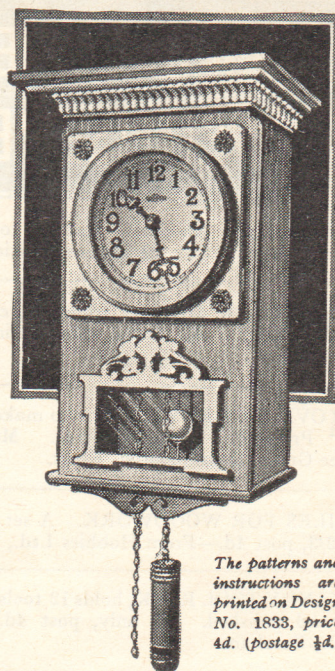
WHAT YOU GET.

The Case.

Planned mahogany for making the case, with other fancy wood, the moulding, glass, etc., for 4/- or 4/9, post free.

The Clock.

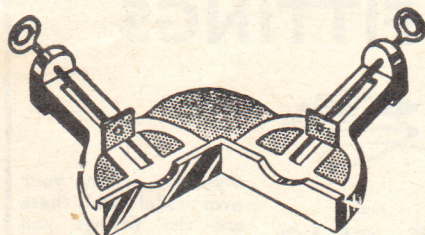
All the necessary mechanical parts, with book of instructions, is supplied complete for 7/6, or 8/- by post.



The patterns and instructions are printed on Design No. 1833, price 4d. (postage 1/2d.)

Buy your kit from any Hobbies Branch, or send direct to—**Hobbies Limited, Dereham, Norfolk.**

CORNER CRAMPS



The No. 1 $\frac{1}{2}$ Corner Cramp takes moulding up to 3ins. wide. It is accurately made and comes in a dull nickel finish.

Price 3/6 Post 6d.

The No. 2 Cramp is of heavier design with stronger cramp-screws. It takes moulding up to 4ins. wide and is finished dull nickel with principal parts plated and polished.

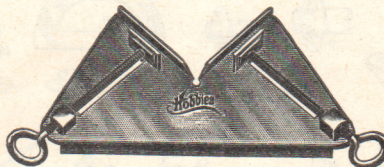
Price 4/6 Post 6d.

We also supply a similar cramp to the No. 2, but with a metal saw guide for mitre cutting. Price 10/6, postage 9d.

HOBBIES LIMITED, DEREHAM

Branches and agents in principal towns.

When you have cut your mitres in an ordinary mitre block, how do you glue up the corners? Bit of a job, isn't it? Unless, of course, you have a corner cramp. Hobbies corner cramps are inexpensive to buy—easy to understand and use, and are a real worth-while investment to any fellow handy with tools.



This is the All-Steel Corner Cramp. Takes moulding up to 2½ ins. wide and is nicely finished off. For small mouldings and beadings it is a real serviceable tool. At the low price of half-a-crown it should be on every work bench.

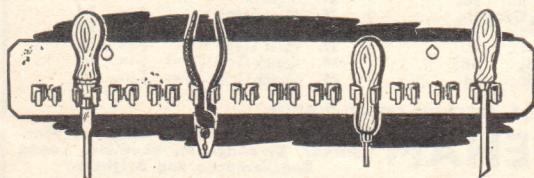
Price 2/6 Post 6d.

A HANDY TOOL RACK

Just the thing for the workshop. Strong metal rack with spring clips for holding handled tools. Eyelets cut for hanging. In two useful sizes.

13ins. - 1/- 18ins. - 2/-

From any Hobbies Branch or by post (4d. extra)
from Hobbies Ltd., Dereham, Norfolk.



HOBBIES

BRANCHES AND AGENCIES. LTD.

Below are the addresses where Hobbies goods can be purchased. In addition, all leading stores and ironmongers stock or can obtain your requirements in fretwork and woodwork, designs, wood, turned legs, moulding, polish, etc.

HOBBIES OWN BRANCHES—

LONDON	16 NEW OXFORD STREET, W.C.1.
LONDON	147 BISHOPSGATE, E.C.
LONDON	83 NEWINGTON BUTTS, S.E.11.
GLASGOW	326 ARGYLE STREET.
MANCHESTER	8 PICCADILLY.
BIRMINGHAM	9a HIGH STREET.
SHEFFIELD	4 ST. PAUL'S PARADE.
LEEDS	10 QUEEN VICTORIA STREET.
SOUTHAMPTON	25 BERNARD STREET.
BRIGHTON	68 LONDON ROAD.
CANADA	
	54 WELLINGTON STREET WEST, TORONTO.

HOBBIES AGENCIES—

Aberdeen.—Jas. Mutch, Ltd., 47 Broad Street; Blackburn.—Mr. H. Mercer, 68 Darwen Street; Bradford.—Messrs. T. Underwood & Co., 13 and 15 Manchester Road; Cambridge.—Mr. H. S. Driver, 28 Hills Road; Canterbury.—Mr. T. D. Goodman, 33 Burgate Street and 16 St. George's Street; Cardiff.—J. Halls (Tools) Ltd., 81 Morgan Arcade; Croydon.—L. H. Turtle, Ltd., 6 Crown Hill; Dover.—Mr. E. F. Bockham, Queen's Gardens; Dublin.—Mr. J. J. McQuillan, 36 Capel Street; Dundee.—Phins Ltd., 29 Nethergate; Folkestone.—Mr. W. H. Allsworth, 16 & 18 Guildhall Street; Hastings.—Mr. W. H. Mozley, 4 York Buildings; Leicester.—Mr. Frank Berry, 3 Loseby Lane; Liverpool.—Mr. C. Lucas, 17 Houghton Street; London.—Messrs. H. Osman, 166 Aldersgate Street, E.C.; Newport, Mon.—J. Halls (Tools) Ltd., 81 High Street; Reading.—Mr. W. J. Sargent, 44 West Street; Swansea.—J. Halls (Tools) Ltd., 8 Gower Street; York.—Messrs. J. H. Shouksmith & Sons, 132 Micklegate.

HEAD OFFICE AND WORKS:

DEREHAM, NORFOLK

GENERAL NOTICES.

EDITORIAL.

All Editorial matter should be sent to The Editor, Hobbies Weekly, Dereham, Norfolk. If enclosed with orders or other matter for Hobbies Ltd., it should be written on a separate sheet of paper. Any matter requiring an answer must have a stamped addressed envelope enclosed.

DESIGN SHEETS.

The presentation Design Sheet is given only with current copies of Hobbies Weekly, and not with back numbers. The designs, however, can be obtained separately, from Hobbies Ltd., price 4½d., post free, or 10d. in the case of double size sheets.

ADVERTISEMENTS.

All orders and letters respecting advertisements should be addressed either to the Advertisement Manager, Hobbies Weekly, Dereham, Norfolk, or to 30/32, Ludgate Hill, London, E.C. 4.

INDEXES AND BINDING CASES.

An Index for any volume is obtainable for 4½d. post free, and Binding Cases to take a complete set of 26 issues (making the volume) are supplied for 1/6, or sent post free for 1/3. The Cases are in red linen with gold blocked name on the front. The Azabook Binder, to hold 24 copies which you can fix in yourself is 3/3 (3/6 post free) including two dozen fastening staples.

BACK COPIES.

Back copies are obtainable from the Editorial address given above or from the Publisher, price 2d. a copy, plus postage.

CONTRIBUTIONS.

The Editor is always pleased to consider suitable articles for these pages, which, if accepted, will be paid for at the usual rates. While every effort will be made to return unsuitable contributions (if stamps for that purpose are sent with them), the Editor does not accept any responsibility for their loss.

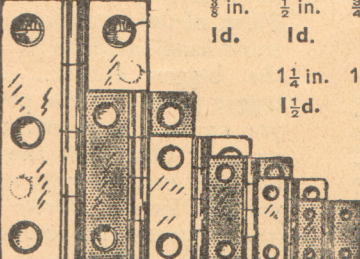
SUBSCRIPTION.

Hobbies will be forwarded by post to any part of the world at the following prepaid rates. Twelve months 13/-, six months 6/6, three months, 3/3. Registered for transmission by Canadian Magazine Post.

HINGES

Brass Hinges suitable for Fretwork and light carpentry. Order Screws at the same time to save postage. Brass Screws 2½d. doz., Iron 1½d. doz.

PRICE PER PAIR

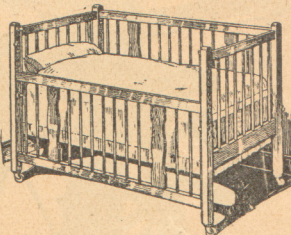
	¾ in.	1 in.	1½ in.	2 in.
	1d.	1d.	1d.	1d.
	1½ in.	1½ in.	2½ in.	
	1½d.	2d.	4d.	

Postage 1½d.
on
any quantity.

If the hinges you want are not listed here, call at any Hobbies Branch, or write to Hobbies Limited, Dereham, Norfolk.

COT FITTINGS

If you are making a child's cot these are the fittings you will need. They are made specially for the man who likes to build his own cot and are offered at money-saving prices.



CASTERS. No. 6203. Smooth running casters. Just the right size for a cot. Price 9d. set of four, post 4d.

DROP SIDE FITTINGS. No. 6204. The Modern cot has a drop side. These fittings are what you need. They cost only 3/6 set, post 9d. Copper bronze finish.

MATTRESS AND FRAME. A strong frame size 4ft. by 2ft. with comfortable spring. A real first class job. Price 12/-, carriage forward.

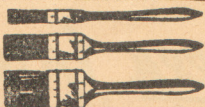
HOBBIES LTD., DEREHAM

Branches and Agents in principal towns.

Varnish Brushes

Bristles set in Rubber. These are sound quality Brushes offered at value-giving prices.

Hobbies Ltd., Dereham.



¾ in., 4d.	2 in., 9d.
1 in., 4½d.	2½ in., 1/3
1½ in., 6d.	3 in., 1/6
	Post 1½d.

REPLY COUPON

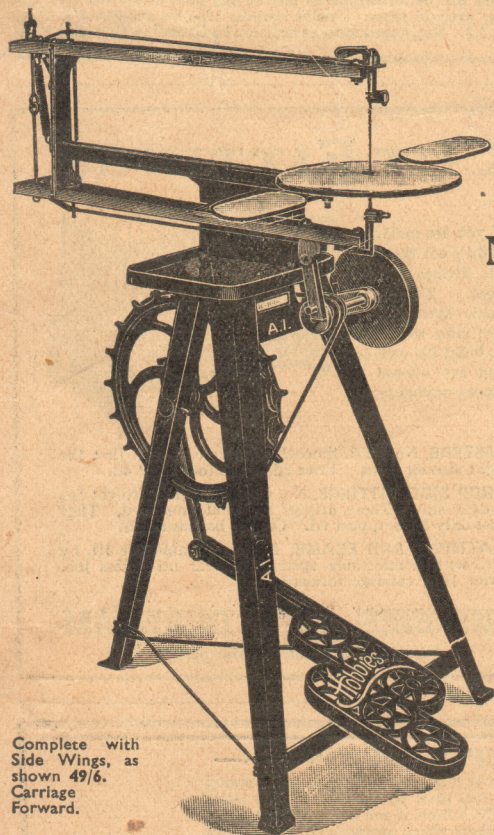
One of these small Coupons and a stamp for 1½d. must be attached to your letter to the Editor, if you are enquiring about anything which demands an answer. Cut the Coupon out and put it in with your letter which should be addressed to The Editor Hobbies Weekly Dereham, Norfolk

For pleasure and profit—

The sawing machine for the handyman. For fretwork, furniture making, model making or a hundred-and-one odd carpentry jobs, this is what you want. You can save money and earn money in many ways, as well as get pleasure in your spare time.



HOBBIES A1 FRET MACHINE



Complete with Side Wings, as shown 49/6. Carriage Forward.

NOW ONLY
45/-

Less Side Wings, carriage forward. You can buy the A1 from Hobbies branches, dealers, the principal stores, or you can order direct from Hobbies Limited, Dereham, Norfolk. Remember, Hobbies guarantee of satisfaction is behind every A1.

It is not mere chance that the A1 is so popular. Behind it is the manufacturing experience and inventive skill of a great factory. At the new reduced price of 45/- it is a masterpiece of value. Strong, heavily built, it will give years of faithful service. Many are still in

use after 30 years! The A1 machine cuts wood up to $\frac{3}{4}$ inch thick almost without effort. The table tilts for bevel cutting.

Think of the extra jobs you could handle with an A1..... the bigger profit! If you prefer you can buy it on our easy payment plan. Let the A1 machine earn money while you pay for it. Write for free illustrated list to-day!

*Something to
keep you Happy*